

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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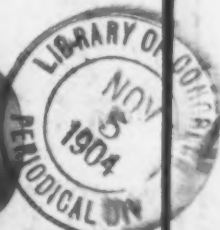
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# THE IRON AGE

THURSDAY, NOVEMBER 3, 1904.

## The Most Powerful Lever Shear Ever Built.

The accompanying illustrations show a No. 7 lever shear built by the United Engineering & Foundry Company, Pittsburgh, Pa. It is claimed to be the most powerful lever shear ever built, exceeding both in capacity and weight any previous tool of its class. Its total weight is 180,000 pounds, and the rated capacity is  $6\frac{1}{2} \times 6\frac{1}{2}$  inch cold steel, although the shear has a record of cutting much heavier material. The shear knives are 24 inches long by 8 inches wide and  $2\frac{3}{4}$  inches thick and have four cutting edges. As shown in the illustrations, it is driven by a 15 x 16 inch specially designed heavy duty piston valve engine. It may also be driven by a 125 horse-power electric motor, or may be furnished for

the bearings and gives ample bearing for the wheel, with large leverage for a key, so that there is no danger of breaking. The main lever pin is secured to the lever by a feather and oscillates on the bearings of the housings, any slight wear being taken up by the adjusting wedges. The cutting edges of the knives are central with the bearings, thus evenly distributing the load on each bearing and preventing the lever from tipping. The shear is designed throughout for heavy work and rough usage, all the parts being of massive construction, so that, except for occasional redressing of the knives, it requires little, if any, attention.

**The Alabama Steel & Wire Company.**—The recent acquisition of the Underwood Coal Company by the

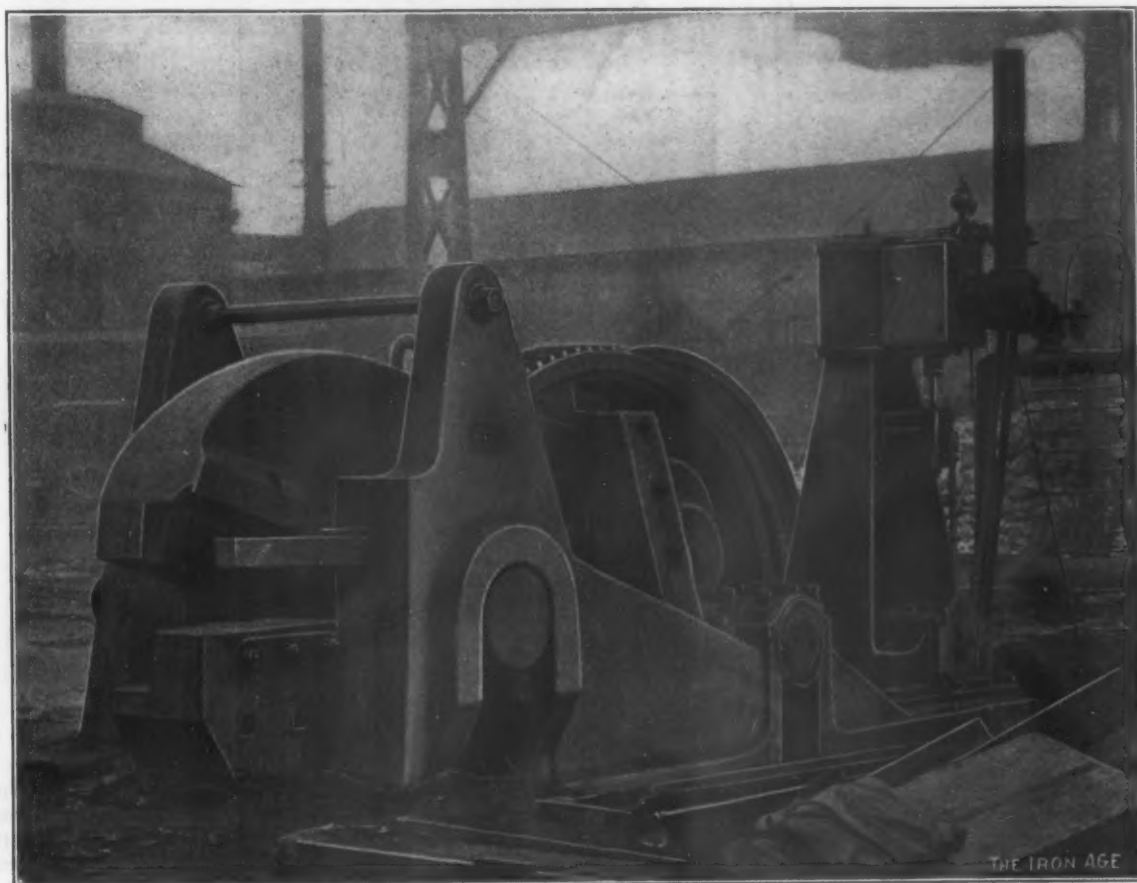


Fig. 1.—A No. 7 Lever Shear Built by the United Engineering & Foundry Company.

belt drive, in which case it is provided with a 20 x 60 inch pulley. The lever pin is of open hearth forged steel 12 inches in diameter, and the pitman shaft is 11 inches in diameter. The gears are steel castings of great strength, the main gears having shrouded teeth, while the motor gears have cut teeth. The fly wheel is very heavy, to insure smooth operation when cutting the heaviest class of material.

The shear lever is operated by a pitman connecting the crank and lever tail in such a manner as to prevent the possibility of the lever sticking and to reduce friction and wear to a minimum. The pitman works on a babbitted knuckle bearing in the lever tail, and the pin passing through the lever and pitman draws the lever back on the return stroke. The pitman is operated by a cast steel crank shaft, which carries the main driving gear on an enlarged hub, the diameter of which is more than twice the crank throw. This enlarged hub is inside of

Alabama Steel & Wire Company attracts attention to the progress which has been made in the development of the wire making enterprise started in Alabama by George H. and E. T. Schuler in 1899. They had been connected with the American Steel & Wire Company, but, deciding to operate independently, they sold their interests in the company and located at Ensley, Ala., where they built a rod mill, wire drawing works and wire nail factory on property adjoining the steel works of the Tennessee Coal, Iron & Railroad Company. Determining to manufacture their own steel, they purchased an iron ore property near Attalla, and in 1902-1903 erected a furnace at Gadsden for the production of pig iron to be converted into steel. Next they built an open hearth steel plant at Gadsden, which was first put in operation in June of this year. The acquisition of the Underwood Coal Company's property now gives them full possession of the necessary supply of raw materials, with all their holdings on a di-

rect line of railroad. The blast furnace has a capacity of 300 tons of pig iron daily, and the steel works has a similar capacity, so that the rod and wire mills are practically on a daily operating capacity of 300 tons without the purchase of any raw material. The *Birmingham Age-Herald* states that after the completion in December of a branch of the Louisville & Nashville Railroad from Altoona to Gadsden the company will have a freight rate on coal from its coal property to its furnace and steel plant of  $12\frac{1}{2}$  cents per ton. The rate to the rod mill and wire plant at Ensley is 20 cents per ton. The total Schuler investment in Alabama is now placed at \$5,000,000.

### The Mechanical Engineers' Annual Meeting.

Secretary F. R. Hutton states that the list of officers to be voted for in the ensuing year, as presented by the

points of interest. The evening of this day has been left free for the members to make their own engagements.

The third and fourth sessions will take place at Mendelssohn Union, Thursday morning and afternoon respectively. At the morning session the following professional papers will be considered, "Centrifugal Fans," by A. J. Bowie, Jr.; "Computation of Values of Water Powers and Damage Caused by Diversion of Water Used for Power," by Charles T. Main; "An Indicating Steam Meter," by Charles E. Sargent; "Stay Bolts, Braces and Flat Surfaces: Rules and Formulæ," by Robert S. Hale; "Condensers for Steam Turbines," by George I. Rockwood. At the afternoon session the professional papers will be as follows: "Bursting of Four-foot Fly Wheels," by Charles H. Benjamin; "Influence of the Connecting Rod Upon Engine Forces," by Sanford A. Moss; "Losses in Nonconducting Engines," by James B. Stanwood; "Power Plant of Tall Office Buildings," by Stirling H.

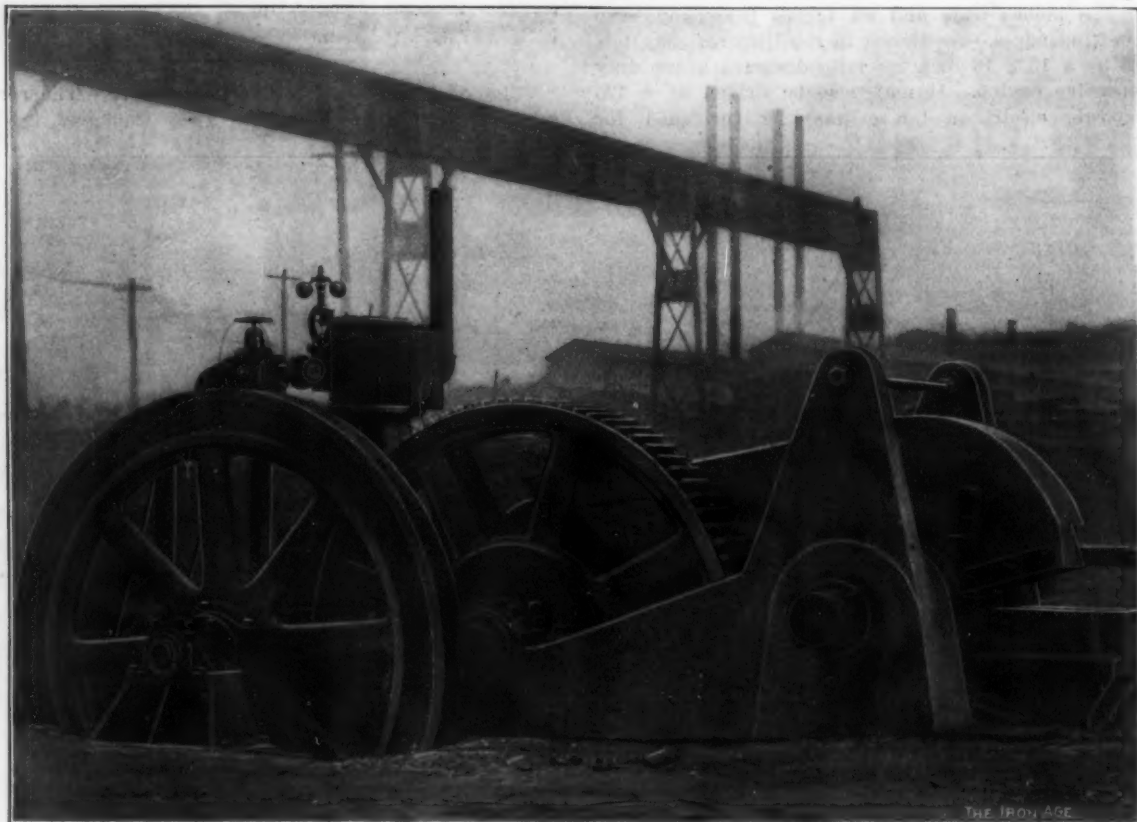


Fig. 2.—Another View of the Most Powerful Lever Shear Ever Built.

Nominating Committee of the American Society of Mechanical Engineers, is as follows: For president, John R. Freeman, Providence, R. I.; for treasurer, Wm. H. Wiley, New York; for vice-presidents, S. M. Vauclain, Philadelphia; H. H. Westinghouse, Pittsburgh, and Fred W. Taylor, Philadelphia; for managers, George M. Brill, Chicago; Fred J. Miller, New York, and Richard H. Rice, Lynn, Mass.

At the coming annual meeting in New York the headquarters of the society will be as usual at the society house, 12 West Thirty-first street, and the opening session will occur on Tuesday evening, December 6, at 9 o'clock. President Ambrose Swasey will deliver the annual address, the subject being "The Achievements of the Engineer with Respect to Exact Measurements." The second session will occur on Wednesday morning at the hall of Mendelssohn Union, 113 West Fortieth street, at 9.30 o'clock. This will be the business session of the convention, and the following professional papers will also be presented: "A New Hydraulic Experiment," by A. F. Nagle; "A Twist Drill Dynamometer," by W. W. Bird and H. P. Fairfield; "Diamond Tools," by Gus C. Henning. Following this, luncheon will be served at the society house, and the afternoon will probably be spent in making excursions to various power stations and

Bunnell; "Pressures and Temperatures in Free Expansion," by A. Bordody and R. C. Cairncross (presented by Charles E. Lucke). Between the morning and afternoon sessions luncheon will be served at the society house. The usual reception for guests and friends will be held at Sherry's on Thursday evening at 9 o'clock and will be followed by dancing and supper.

The closing session will be held at the society house on Friday morning, December 9, at 10 o'clock. Following are the professional papers that will be considered: "Fuel Consumption of Locomotives," by George R. Henderson; "Road Tests of Brooks Passenger Locomotives," by E. A. Hitchcock; "Discharge of Water with Steam from Water Tube Boilers," by A. Bement; "More Exact Method for Determining the Efficiency of Steam Generating Apparatus," by A. Bement; "Forcing Capacity of Fire Tube Boilers," by Francis W. Dean.

Among the highest steel chimneys in the United States are the following, according to W. W. Christie in the *Engineering News*: Nichols Chemical Company, Brooklyn, N. Y., 310 feet high, 35 feet in diameter at base, 12 feet at top; Pennsylvania Salt Company, Natrona, Pa., 225 feet high, 10 feet flue diameter; Maryland Steel Company, Sparrow's Point, Md., two chimneys, each 225 feet high



and 13 feet inside diameter. All of these are at metallurgical works, as are also the two highest brick chimneys, at the old Grant smelter, at Denver, Col., and the works of the Orford Copper Company, at Constable Hook, New York Harbor, each of these being about 350 feet in height.

### A New Electrically Driven Lodge & Shipley Lathe.

By a combination of mechanical and electrical speed changes the lathe shown in the accompanying illustration

of the front side of the lathe, Fig. 1, shows the general characteristics of the lathe, and, in conjunction with the detail from the rear of the head stock, shown in Fig. 2, makes clear the operation of the head stock.

The motor mounted on its cast bracket is coupled direct to a short driving shaft, A, Fig. 2. The motor is built by the Northern Electrical Mfg. Company, Madison, Wis., and is of variable speed type, with a ratio of 2 to 1. Mounted on the shaft A are two gears, B and C, which are in one piece and form a sleeve, which is feathered to slide in a spline in the driving shaft. The sleeve is traveled by means of the shipping mechanism shown,

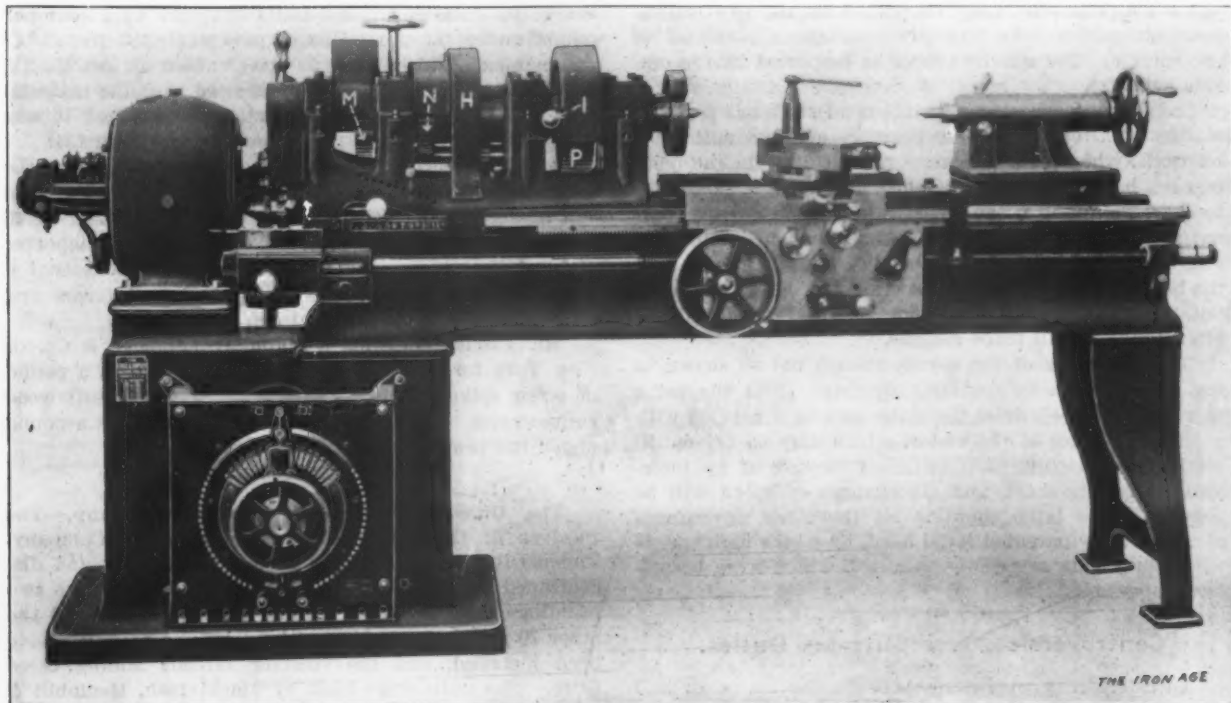


Fig. 1.—New Electrically Driven Lodge & Shipley Lathe.

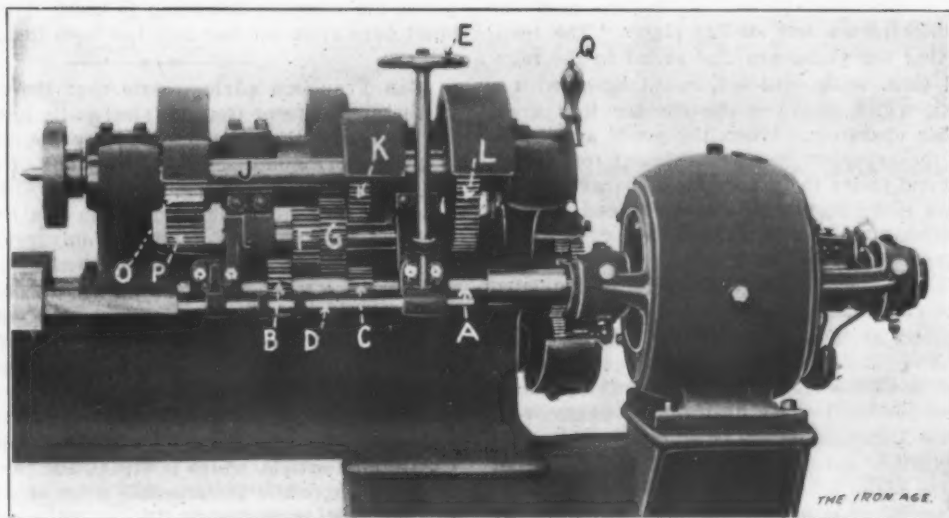


Fig. 2.—Detail from the Rear of the Head Stock.

tions, designed by the Lodge & Shipley Company, Cincinnati, Ohio, is capable of a very wide range of speeds. The new features of the lathe are found in the head stock and in the manner of connecting up the drive. It will be noticed that the arrangement is a compact one of neat appearance and commendable simplicity. The feed changing device is of the form now generally familiar as made by this company. It gives all feeds for ordinary turning and screw cutting, covering a wide range with the use of a lead screw, which also serves the purpose of the customary splined shaft. The view

consisting of rod B, which carries a shipper and is reciprocated by rack and pinion from the hand wheel E. In this manner gear B may be caused to intermesh with gear F, or C with G, which doubles the range of speeds. The gear G intermeshes with a gear loosely mounted on the spindle directly beneath the shield H, shown in Fig. 1. By means of the clutch handle I the spindle may be directly driven through the train of gears which has been outlined, but there are in addition two speeds obtained by back gears mounted on the shaft J, Fig. 2. This shaft carries two gears, K and L, on a single sleeve,

which may be alternately engaged with corresponding gears M and N, mounted on the same sleeve with gear H. The gear O at the opposite end of the back gear shaft is in one piece with the shaft and connects with the fixed gear P on the spindle. When the back gears are not required they are thrown out of mesh entirely by rotating the eccentric bearing bushings of the back shaft by the handle Q. These bushings are connected together by a rod passing through a hole in the back gear shaft, so that they both turn simultaneously. The back gears give speeds of ratios of 3 to 1 and 9 to 1, respectively. The sleeve carrying the gears H, M and N is not mounted directly on the spindle. It has a clearance of about  $\frac{1}{8}$  inch and is separately supported by the two central bearings, which take the strain of these gears off of the spindle. The spindle proper is supported by the outside bearings.

The self oiling bearings in this head stock are features worthy of attention. These bearings are cast with deep oil wells, which hold at least a pint of oil. On the front of each bearing is a lug notched to expose a glass tube to show the height of the oil. In the middle of each journal are brass rings with projections, which dip into oil and drop it on the rubbing surfaces. It is claimed that the bearing is of such a construction that no oil can work out, and that attention is not required usually more often than once in three months.

The controller of the motor, though not so shown in the illustrations, is regularly operated from the lathe carriage. For belt drive the lathe may be furnished with a pulley in place of the motor, which may be driven directly from the line shaft without the use of an intermediate countershaft, and six changes of speed will be possible. The lathe contains all the other advantages of the recently patented lathe head, by which high speeds with heavy cuts are easily obtained, which were heretofore impossible.

### Controversies Over Customs Duties.

An interesting controversy between the appraiser and the collector of the port of Philadelphia, in which the importers are supported by the appraiser, is now before General Appraiser Fischer for adjudication. The importers are R. D. Wood & Co. of Philadelphia, and the merchandise is checkered plates, which are used for flooring in boiler rooms and similar places. The testimony shows that the plates are first rolled in the regular way, and then, while still hot, rolled again with a checkered roll, which produces the checker that gives the plates their character. When the goods arrived in this country the appraiser assessed them at four-tenths of 1 cent a pound under the provisions of paragraph 135 for steel plates in all forms and shapes valued between 1 and 1 4-10 cents a pound. The collector, however, classified them as boiler plates under paragraph 126 at six-tenths of 1 cent a pound, and the entry was liquidated on this basis. It is against this decision of the collector that the importers are appealing.

The Board of United States General Appraisers on October 28, in a decision written by General Appraiser Fischer, overruled the protest filed in the name of F. Behrend of New York against the classification of thermit as a manufacture of metal at 45 per cent. Mr. Fischer decides that the claim of the importer that it was dutiable as a nonenumerated manufactured article at 20 per cent. is without foundation, and at the same time he decides against the later classification by the customs authorities of the material as a chemical compound at 25 per cent. Mr. Fischer in his decision says: "The testimony of Dr. Hans Goldschmidt, the inventor and manufacturer of thermit, shows that it is a mechanical mixture consisting of 4 parts of powdered aluminum and 1 part of powdered oxide of iron; that the aluminum metal is purchased by him in lump form, and the oxide of iron in the form in which it comes from rolling mills as a by-product; that he reduces the aluminum and oxide of iron to powder, and then mixes them together by hand in the proportions already stated, and that the aluminum is the component material of chief value. There is no resultant chemical change from the mixing—the aluminum

still is a metal and the oxide of iron is unchanged. We are of the opinion that the assessment of duty at the rate of 45 per cent. was correct. The article is composed wholly or in part of aluminum, and it falls precisely within the terms of paragraph 193." This classification will, however, have no effect on the price of thermit, as Dr. Goldschmidt has already established a plant in New York for its manufacture.

Mr. Fischer is also the author of a decision handed down October 29 overruling a protest by W. N. Proctor & Co. of Boston against the classification at 45 per cent., as manufactures of metal, of sheets of steel known as black taggers. These sheets were claimed by the importers to be dutiable at one and two-tenths of 1 cent per pound under the provisions of paragraph 131 for sheets of common or black iron or steel valued at less than 3 cents a pound. The testimony showed that the material was valued at more than 3 cents a pound, and it was thus excluded from the provisions of paragraph 131.

Another decision by Mr. Fischer, handed down the same day, overruled a protest by W. C. Townsend of Boston against the classification of iron grit or sand at 45 per cent. as manufactures of metal. The importer claimed that it was dutiable at six-tenths of 1 cent a pound under the provision for steel in all forms and shapes not specially provided for.

Mr. Fischer sustains a claim by Lembeck & Co. of New York for classification as spikes at 1 cent a pound of screw spikes, designed to permit the use of soft wood railroad ties. They had been assessed at 4 cents a pound under the provision for "wood screws."

**The Ohio Valley Steel Foundry Company.**—The receiver of the Ohio Valley Steel Foundry Company, Paden City, W. V., has installed a sheet plant and discontinued making steel castings. The company has two buildings, one 69 feet wide and 440 feet long, and the other 70 feet wide by 440 feet long. Three hot mills have been installed, and the receiver intends adding three more. The mills were built by Mackintosh, Hemphill & Co., Pittsburgh, and are driven by a Hamilton-Corliss engine. There are now under construction two open hearth furnaces, one of 25 tons capacity and the other of 30 tons. It is also proposed to add a bar mill to the plant, the company intending to break down billets into sheet bars after the bar mill has been installed.

San Francisco advises state that the representative of the syndicate of German steel mills has submitted a bid to supply the steel required for the construction of an eight-story building some thousands of dollars below the offers of American manufacturers. For the last two years German steel has been in the San Francisco market, but until the present it has only proved available for "piecing out." The syndicate was able, however, in this instance to undertake to supply all of the steel for the reason that its delivery is not required under eight months. German steel can be shipped to San Francisco and other Pacific Coast ports for \$6 a ton by steamer and \$4 a ton by sailing vessels, while land freight for the American steel across the Continent is \$10 a ton. This and the export bonus serve to offset the original cost of the German article, which is \$19.50, and the duty thereon of \$10 a ton, while the schedule price of American steel in Pittsburgh is at present \$28 per ton, to which must be added the \$10 per ton for quick shipment to the Pacific Coast.

Ernst Wiener of the firm of Arthur Koppel, 66 and 68 Broad street, New York, has just returned from a three months' trip to Europe. While abroad he made arrangements which will enable him in future to furnish any of the standard styles of railway materials made by his firm from a stock kept in this country. He also perfected a system whereby orders which call for special manufacture can be shipped promptly. In this way such difficulties as his firm has had in the past from delays in filling orders will be entirely obviated. He reports that general business conditions in Germany are very good.



### The Adams-Farwell Gasoline Motor.

A gasoline engine particularly designed for automobile use has recently been placed on the market by the Adams Company, Dubuque, Iowa. Its distinguishing feature is that its action is the reverse of that of an ordinary engine in that the engine shaft remains stationary and the cylinders revolve around it. The engine is not to be confused with what is usually termed a rotary engine. It consists of three units, each consisting of a cylinder complete with head and one-third of the crank case cast in one piece. These are bolted together and also to top and bottom cast steel flanges, which contain bronze bushings forming bearings around the vertical crank shaft. This revolving member is perfectly balanced and takes the place of a fly wheel. In a 20 horse-power engine having cylinders of 5-inch bore and  $4\frac{1}{2}$ -inch stroke the revolving part weighs 190 pounds.

In each cylinder is a cast piston having four rings. The three pistons are connected to a single crank wrist pin of very large proportions by bronze pitmans. The pitmans, with the pistons at their outer end, swing around the stationary wrist pin in practically perfect

bility to all parts are a desideratum. The lack of vibration of the motor is attributed to the perfect balance of the revolving parts, the manner of revolving the cylinders in a horizontal plane around a vertical axis and to the novel manner of controlling the speed of the motor by a variable compression system. The light weight of the motor, as compared with the three-cylinder motor of the ordinary type having the same power and cylinder sizes, is brought about, not by sacrificing the strength of any of the parts, but by eliminating many parts found necessary in the engines of the ordinary type.

A single central crank case answers for the three cylinders. A single throw crank of about one-third the weight of the three-throw crank found in the other type of engines is employed. A single valve operating cam opens both inlet and exhaust valves.

No muffler is employed, as the velocity of the cylinders passing through the air makes a muffler of the ordinary type unnecessary. Auxiliary exhaust ports, which let out the high terminal pressure against the rapidly receding volume of air, are used. The discharge acts upon the air like a skyrocket and not like a gun. There is less noise with this system than with the ordinary engine

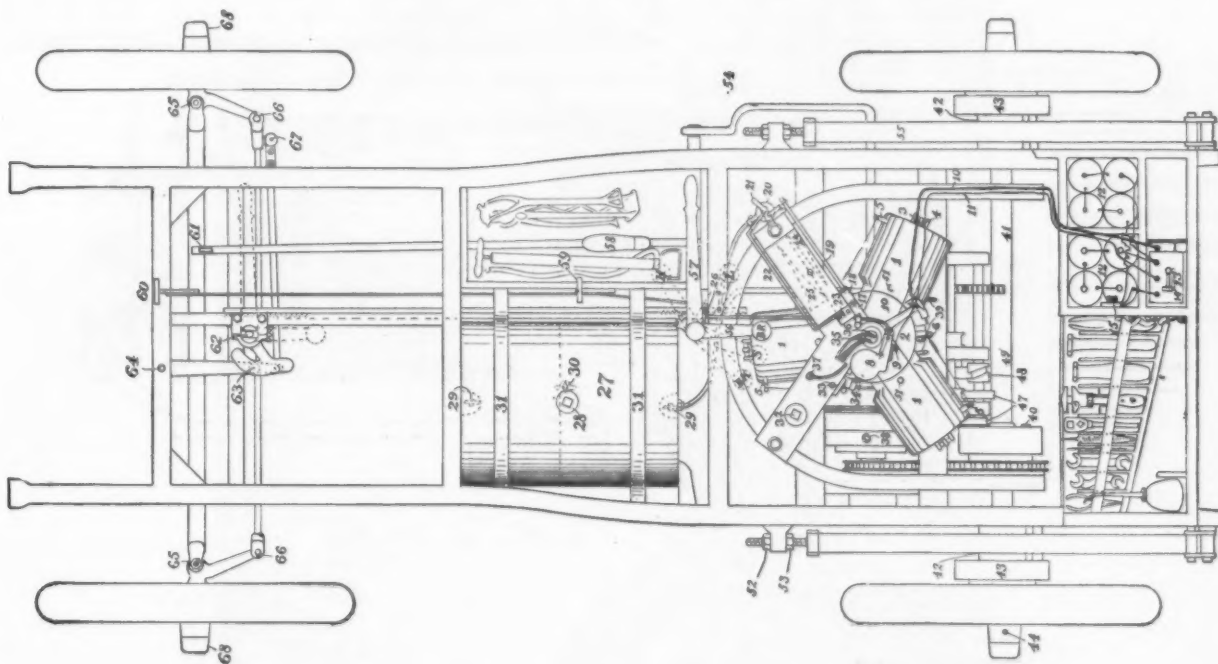


Fig. 1.—View of the Chassis of an Adams-Farwell Motor Car, Showing the Arrangement of the Machinery.

mechanical balance. The wrist pin being eccentric with the axis of the revolving cylinder unit, as the pistons reciprocate back and forth in the cylinders the cylinder unit is caused to revolve. The combined rotary and reciprocating motion of the pistons has the effect of removing the dead stop and reversal of the moving mass which occurs in an ordinary engine. It is, therefore, susceptible to a very perfect mechanical balance. The action of the exploding charge is practically the same in this engine as in any other, except that a very smooth running is possible with the variable compression control.

All engines exert a force or torque in two directions during the explosive or power stroke. A force or torque tends to turn the crank, and with it the fly wheel, over in one direction, and an equal force or torque tends to turn the engine, cylinders, casing, &c., in the opposite direction. The ordinary engine has the cylinders and case secured to a foundation and they cannot turn, but the crank shaft is free to turn; the Adams-Farwell engine has the crank shaft secured so it cannot turn, but the cylinders are free to turn. The ordinary engines transmit their power from the crank shaft; this engine transmits power by a bevel gear from the revolving crank case. This is the difference technically, but the builders claim distinctive advantages for this motor where lack of vibration, light weight, simplicity, practical air cooling under all conditions, wide range of speed and accessi-

when both are working at full power, and the exhaust cannot be heard when the engine is working at part power; there is no back pressure, the auxiliary exhaust ports reduce the pressure to that of the atmosphere before the exhaust valve in the head of the cylinder is open. The gases that pass out of the exhaust valve are therefore comparatively cool, and the annoyance of pitted and warped exhaust valves is eliminated. The duty required of the valve operating levers, cams and gears is very light indeed, as there is no terminal pressure in the cylinders when the valve is open. The valves are closed by centrifugal force, which force is always in proportion to the requirements. The higher the speed of the engine the greater the force, and the greater would be the need of a stiff spring or force to close the valve. The springs actually used are made of light piano wire and are useful only to close the valves in starting the engine when the centrifugal force attending the slow starting speed might not be sufficient to overcome the resistance of the cold lubricating oil on the valve stems. After the engine is slightly warmed every spring might be removed, and the engine could be started and run as perfectly as with the springs.

Air cooling is effectually accomplished by the cylinders revolving at a rapid rate, drawing in the air at the center and expelling it with great rapidity at the periphery or ends of the cylinder. The cylinders are pro-

vided with longitudinal ribs cast integral with the cylinders, which provide a large radiating surface. Every particle of air that is in contact with any part of the engine one instant is thrown off with great velocity by centrifugal force, and must be replaced with air drawn in at the center. There can be no eddy currents; each cylinder, and every part of each cylinder, must get the same rapid air circulation, and there can be no hot spots or unequal expansion; consequently the pistons continue to fit well and will not stick.

As has been said, the speed of the motor is controlled by a variable compression system. This is obtained by allowing that part of the charge not needed to give the motor the required power to escape back by the inlet valve, which is mechanically held open for a part of a compression stroke. That part of the charge so escaping is drawn in by another cylinder; hence there is no waste of the gases. When the maximum power is required the

at the same time the gasoline valve 23, forming a vapor, which enters the central chamber, and thence passes out through the channel at the top of the cylinder, and through the inlet valve 3. The sectional view, Fig. 2, shows this clearly. The proportion of air and gasoline is always the same and the quality of the mixture is constant, but the quantity varies according to the power required and the position of the variable compression cam. The mixing valves are opened only after the sucking cylinder has drawn in that part of the charge which the compressing cylinder is blowing back through its inlet valve.

The spark is timed by an automatic spark regulator, which fires the charge at all speeds at a point to produce the greatest efficiency. This is a device employing a centrifugal governor, which advances the spark when the speed of the engine increases and also increases the length of time of the contact of the primary circuit. A contact of the primary circuit for one-thirty-sixth of a

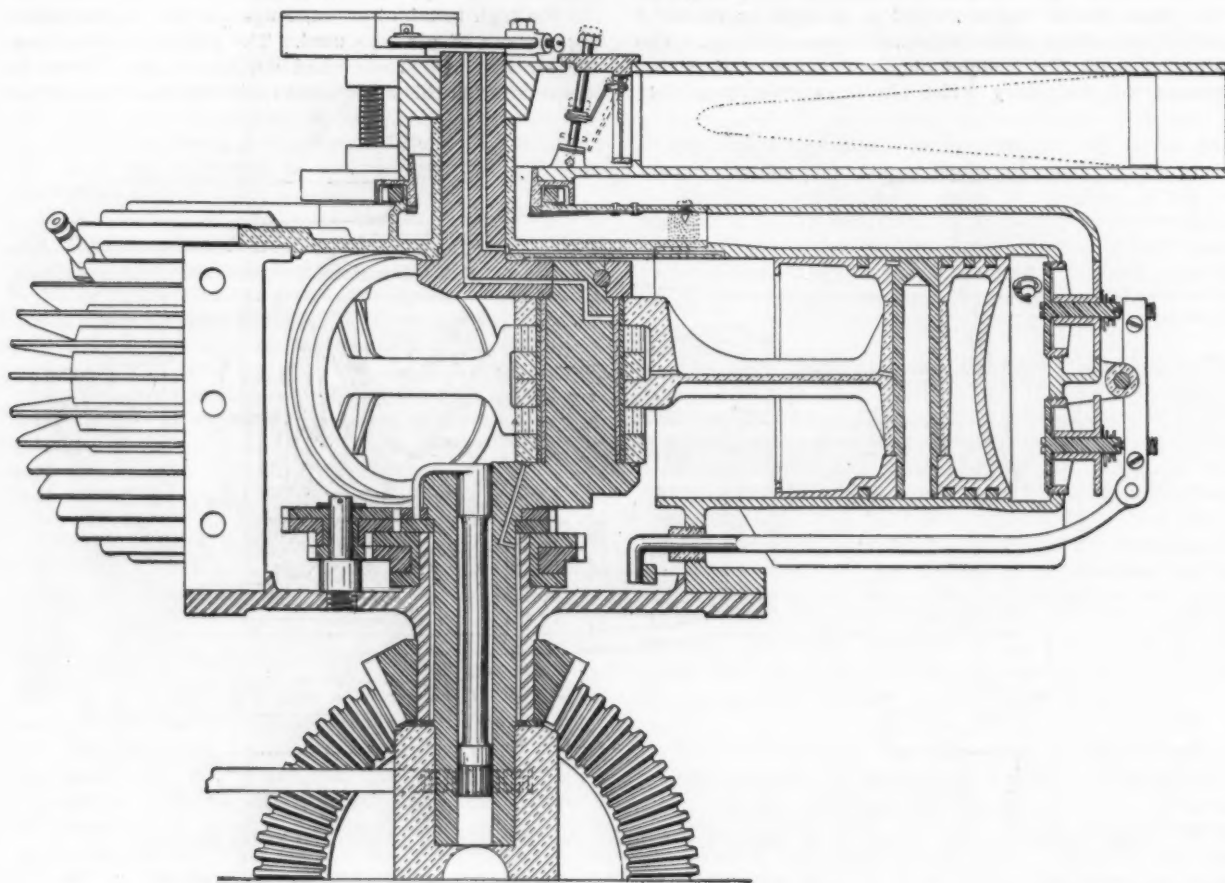


Fig. 2.—Section through the Motor.

inlet valve is closed at the end of the suction stroke and the full charge is compressed to about 95 pounds per square inch. When minimum power is wanted the inlet valve is not closed until the completion of the compression stroke; an exceedingly small part of the charge is retained and ignited at atmospheric pressure, giving a gentle expansion. Variable compression is the entire source of control. This system of control is claimed to be very economical, to be conducive to very smooth running, to obviate the necessity of heavy exhaust valve springs, to run much cooler and to keep the cylinder heads and spark plugs entirely free from sooty deposits.

The carburetter is automatic at all speeds, no attention being required after once adjusting. Gasoline is pumped through the upper pipe 19, Fig. 1, into the constant level reservoir 18, which is a small cavity covered with a watch crystal, enabling the gasoline to be seen, and water, if any, detected. The surplus gasoline flows back into the pump well 20 through the lower tube. An opening connecting the reservoir with the valve 23 is regulated by a needle valve, the handle of which is at 26. The air, after passing through the linen bag 24, which prevents dust entering, raises the little swing valve and

revolution of the engine gives sufficient time for the spark coil to become saturated and give a good spark when the engine is running 150 revolutions or less. This contact is automatically increased to about one-twelfth of a revolution of the engine when running at 900 revolutions per minute. This is claimed to result in a great saving of battery current and contact breaker points, for without this variable contact it is necessary to make the contact of the primary circuit long enough for the highest speed, therefore when the engine is running slow it uses two or three times more current than is actually required. There is but one spark coil. The high tension current wire 10, Fig. 1, is connected to the commutator 7, which is an insulated segment with a brass strip on the lower edge. On each cylinder there is a wire which leads from an insulator, 6, to the spark plug 5. On the top of insulator 6 is an adjustable brass cap, which is set to pass under the commutator strip 7 without quite touching. In operation, as the cylinder which is compressing approaches the dead center position the insulator 6 is passing under the commutator, and the contact breaker breaks the primary circuit, and a spark jumps the gap between the commutator 7 and porcelain



6, and thence to the spark plug and into the cylinder. When the motor is started the spark is late and jumps the gap at the extreme right hand end of the commutator. A back kick is impossible. As the speed of the motor increases the automatic spark regulator advances the spark and it jumps the gap further and further toward the left end of the commutator. The exact position of the spark can be seen while the motor is in motion.

The oiling of all parts of the motor proper is cared for by an automatic positive feed oil pump, which consists of a circular barrel containing four cam actuated plungers. The barrel is positively driven by a worm gear; there are no ratchets, springs or valves, and it positively delivers one drop of oil to each of four tubes every 100 revolutions of the engine. Two of these tubes lead to a distributing channel in the upper end of the crank shaft and oil the top of each cylinder; one tube leads to the upper end of the wrist pin and thence

ders. Should a valve leak it can be replaced by another in a few minutes on the road. No gaskets or packed joints exist anywhere on the engine. The brass gasoline pipe, some 4 feet in all, is the only pipe about the engine. By taking out three bolts on each side, the two in the top and the two in the bottom flange, any cylinder may be drawn off for examination of piston, pitman, or interior of crank case without disturbing any other part of the engine. By removing the two cap boxes on the transmission shaft the entire transmission can be removed.

The base of the motor to which the crank shaft is keyed is a spider shaped bronze casting which forms the base of the engine; although light it has great strength and stiffness. Every part of the motor and transmission is secured to this bronze casting, forming an integral, rigid power unit that may be removed and operated independent of any other part of the car. The complete

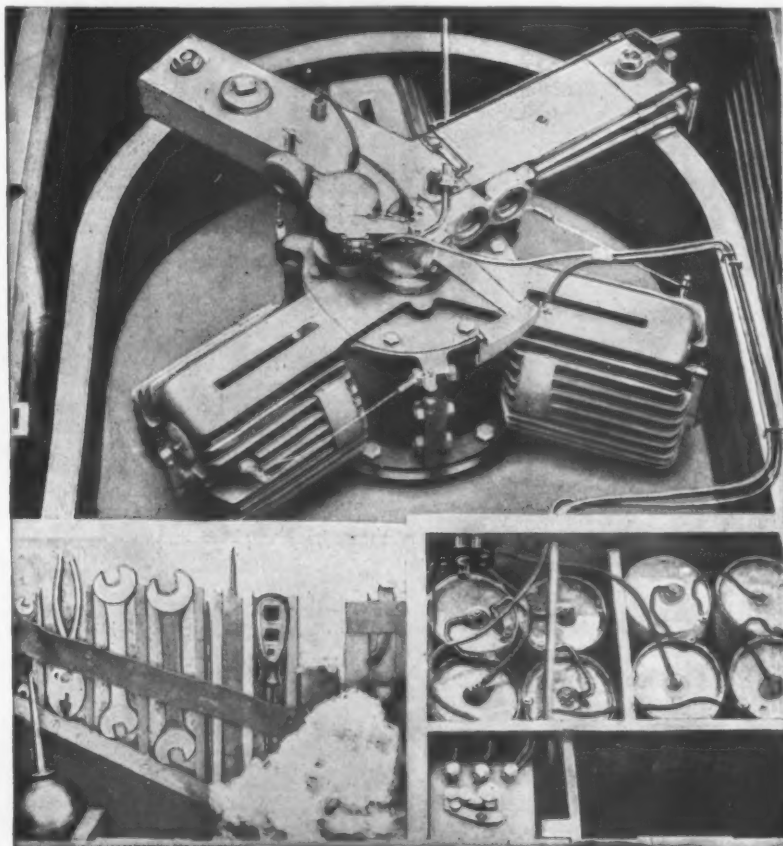


Fig. 3.—View of the Motor, Tools and Batteries in the Rear of a No. 5 Adams-Farwell Car.

to the lower crank shaft bearing, and the surplus accumulating in the crank case lubricates the valve operating cams and gears. An opening on each side of each cylinder admits oil from the crank case to the cylinders, thus oiling each cylinder and piston at three equidistant points. The fourth tube is a reserve and is usually turned to deliver its oil back into the tank. The oil tank is located in the left end of the angular aluminum casting which forms a support to the upper end of the crank shaft. Being very close to the engine, it is kept warm in the winter time, and the tubes leading from the pump are very short and not likely to be broken.

Fig. 1 is a view of the motor as situated in the rear of an automobile body. From this position it will be seen that every part of the motor proper that will ordinarily require examination or adjustment is exposed to view and is readily accessible, also every necessary tool required in the adjustments. Two sets of batteries are provided for the spark coil and a double throw switch, so that either set of batteries may be used separately.

With no compression the cylinders may be easily turned around, bringing any one in convenient position for removing the spark plug or valves; all valves are interchangeable. A cage forming the valve seat and guide for the valve stem is screwed into the head of the cylin-

der. power equipment, including the motor, transmission, oil tank and pump, carburetter, clutch operating cams, &c., all secured to the bronze supporting spider, weighs 387 pounds. Of this, 157 pounds is the weight of the transmission parts, which would not be needed if the motor were used for other purposes than that of automobile propulsion. All motor and transmission bearings are bronze, with steel shafts, and the bearings are renewable.

All of the new features, including the revolving of the cylinders around a vertical stationary crank shaft, system of muffling, variable compression control, automatic spark regulator, control from front and rear seat, variable strength springs, carburetter, oiling system, &c., are the subjects of patents granted and pending in this and foreign countries.

A system of electric heaters of novel form is being installed on the new steamship "Minnesota," now being completed at the works of the Eastern Shipbuilding Company. There are 150 heaters, each measuring 15 x 7 inches, 2½ inches deep. Eight heat units, with a capacity of 100 watts each, can be operated by means of proper switches, so that three, five or eight are in action at the will of the occupant of the stateroom. The heaters are supplied with current at 230 volts.

### German Steel Consumers Fighting the Syndicate.

The London *Iron and Coal Trades Review* publishes the following interesting statement by its Düsseldorf correspondent:

"The Association of Consumers of Semi-Finished Steel has once more risen in arms against the policy of the Steel Syndicate in exporting partly manufactured products at low prices and in continuing to charge the inland works considerably higher quotations. It is pointed out that the latter have to pay 82 shillings 6 pence for blooms, 90 shillings for billets and 92 shillings 6 pence for

result. In the meantime the association intends to approach the Government with a view to seeking relief, and in this endeavor it is being supported by sundry manufacturers' associations."

### Henry & Wright Sensitive Drills.

The problem of adapting a sensitive drill press to use high speed steel drills has been solved in the machine which is shown in detail in the accompanying illustrations. High speed and the reduction of friction by means of roller bearings and by devices for relieving the parts from torsion and other strains were the principal objects

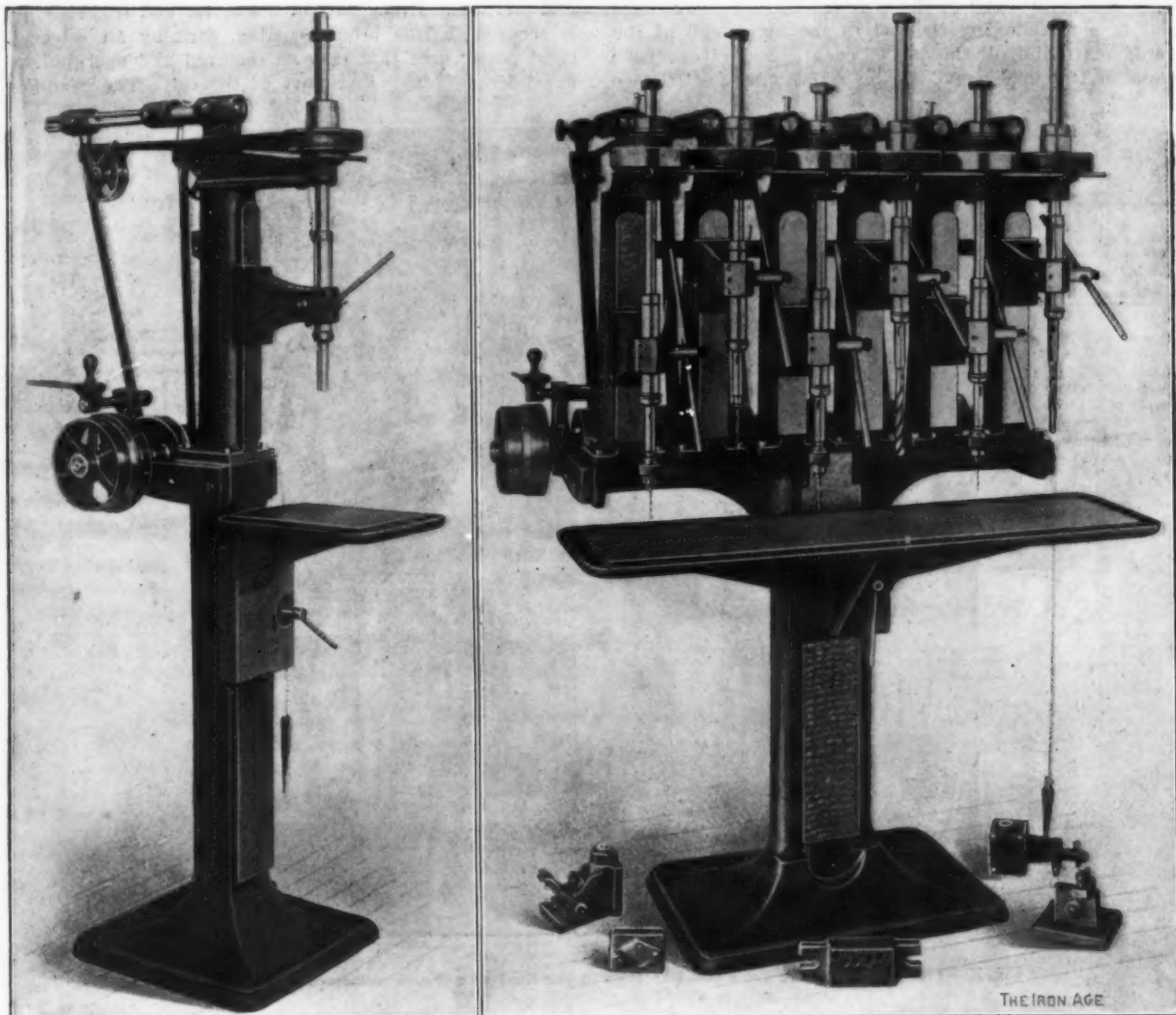


Fig. 1.—A Single Spindle and a Six-Spindle Sensitive Drill Adapted to Use High Speed Steel Drills.

sheet bars at Aix-la-Chapelle, Diedenhofen, Dortmund, Ruhrort, or Siegen, whereas billets are being sold for export at from 69 to 70 shillings, and sheet bars at 71 shillings per ton, f.o.b. Rotterdam or Antwerp. In this way the association states that the makers of finished products find it extraordinarily difficult to compete in the export markets, while at the same time the position in the inland market is prejudicially affected by the competition of Steel Syndicate works in the particular finished products which are not under the control of the syndicate, and which are offered at lower prices than those at which the mere rolling mills are able to produce them. It is said that it would not be necessary to export a single ton of billets if the Steel Syndicate were to offer them to inland works at the same price as that at which foreign contracts are concluded. The Steel Syndicate, which is preparing a reply to the association, has already stated that an improvement in the prices of the B or finished products will be brought about by their syndication, and the preliminary labors in connection with the control of bars lead to the hope of a successful

sought in the design, and an interesting arrangement has been incorporated for maintaining a correct belt tension. The result is a drill press little heavier in construction than the ordinary machine of its type which will use high speed steel drills up to  $\frac{3}{4}$  inch diameter and is driven by a belt only  $1\frac{1}{4}$  inches wide. The machines are manufactured by the Henry & Wright Mfg. Company, Hartford, Conn., and were designed by Charles D. Rice of the same city, superintendent of the Underwood Typewriter Company.

The advantages claimed for the machine are a saving of power and preventing of undue wear because of reduced friction; full capacity for driving a  $\frac{3}{4}$ -inch drill in gray iron; four speed variations instead of the usual three, and ease in feeding with large drills where the torsion strains are great, due to the balanced roller key spindle drive. Because of the ease in running, the same size of main driving pulley and the same width of belt are used for any number of spindles from one to six. An interesting feature is the method employed for obtaining the four changes of speed for the drill spindle with but



two steps to each cone pulley on the driving shaft and on the spindle. This is illustrated in Fig. 2, which shows the setting of the pulleys and idlers for the two intermediate speeds. The two slowest speeds are obtained with the belt running on the large step of the spindle pulley and one or the other of the steps on the driving shaft pulley. The two higher speeds are obtained by employing the small step of the spindle pulley. Large drills are used only with the large step of the spindle cone, and small drills with the smaller spindle cone step, thus maintaining a low belt travel as compared with the spindle

small step of D with A in the same position as in Fig. 3 and B brought somewhat closer to A. The adjusting idler B is used in all cases to take up the slack in the belt, and to keep it at proper tension in making changes of speed or where slack occurs from long usage in one position. The shaft of the adjusting idler pulley A is provided with milled face, which the hand tightening screw engages, and is of just sufficient length to allow of the idler being raised or lowered to the required position and no farther. In making changes of speed involving the shifting of the belt from the larger to the

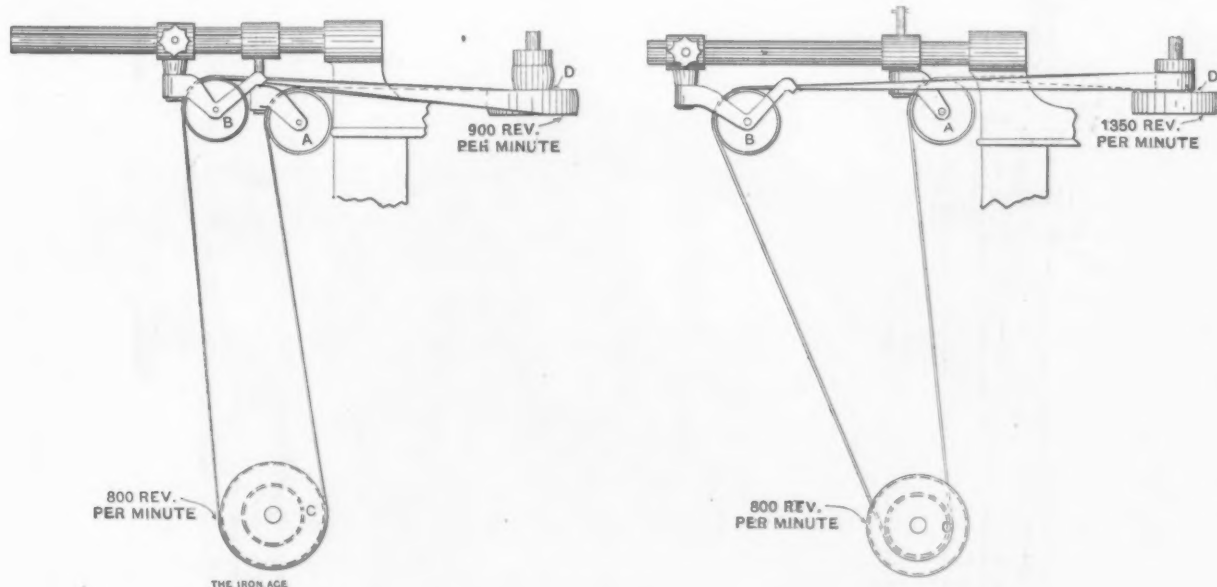


Fig. 2.—Positions of Pulleys and Belts for the Two Intermediate Drilling Speeds.

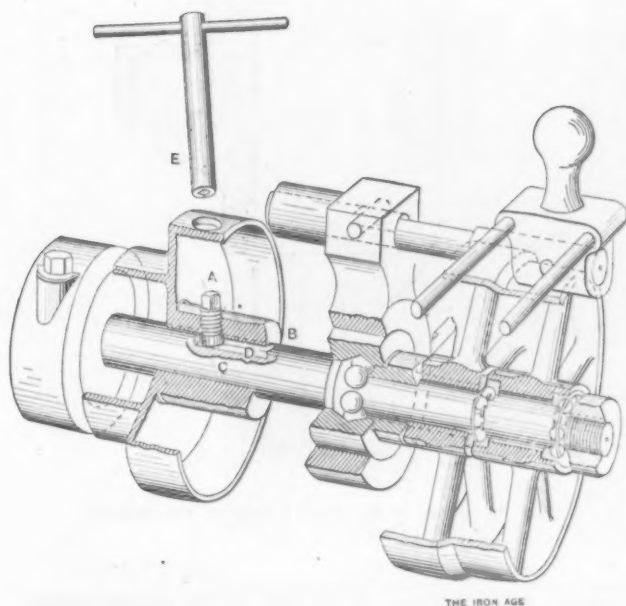


Fig. 3.—Detail of the Driving Pulley.

speed. A very high speed is maintained in the operation of this drill press from a constant driving shaft speed of 800 revolutions. The four speeds of spindle obtained are 600, 900, 1350 and 2025. For the slowest speed the belt runs on the small step of the driving shaft pulley C and the large step of the spindle pulley D, and the adjusting idler pulley A is at its lowest position to make the belt track properly. Fig. 2 shows the belt on the large steps of both C and D, with the adjusting idler A in same position as before, and idler B brought close to A. In Fig. 3 the belt is shown on the small steps of both C and D, the adjusting idler A being at its highest position and B at its greatest distance from A. For the fastest speed the belt is on the large step of C, and the

smaller step of the driving shaft pulley C, or *vice versa*, it is necessary to shift the pulley on its shaft a distance equal to the width of one of the faces. This is accomplished by means of the square headed screw A in Fig. 3 projecting through the hub of the pulley B and working against a brass bushing, C, which slides in groove D. This screw is manipulated by means of a socket wrench, E, which reaches it through a hole in the rim of the large step of the pulley.

The arrangement of the idlers is shown in Fig. 4. To prevent the operator from shifting the belt onto the wrong step of the driving pulley pins are driven into the column one on either side of the belt, and project to a point so close to the pulley faces that it is impossible for the belt to be forced out of its correct alignment (not shown in drawings). The idler pulleys have an easy lateral movement to enable them to conform their position to the tracking of the belt. A continuous cemented belt is used, no lacing being required, thus replacing the two laced belts of ordinary sensitive drill practice. A loose pulley with a riser is employed to permit the driving belt to be run slack when the machine is out of use.

The arrangement of the pulley on the spindle, as shown in Fig. 5, plays an important part in the mechanism of this drill press, in assisting in reducing friction to a minimum. The spindle pulley is mounted on a brass bushing, A, forced into the pillar casting B, which takes up the strain due to the pull of the belt on the pulley, and thus removes the strain from the spindle. The pulley is engaged with the spindle by means of a new balanced roller clutch key drive, as shown at C C, Fig. 5. The spindle has a rectangular groove on opposite sides of its periphery, and the face of each roll works against the narrower face of the groove only, the side of the roll having sufficient clearance to prevent rubbing against the other face of the angular groove. The advantage claimed for this device over the common practice of a stationary feather engaging one side of the spindle only, is a great reduction of friction, because the spindle is relieved from side thrust.

In ordinary practice the drill spindle is reduced in

diameter at the point of adjustment by a thread on the spindle which takes the adjusting nut. On this press such a reduction is not necessary because of a new adjusting device. The adjustment is obtained by means of a threaded collar pinned to the spindle and an adjusting nut which engages the thread of the collar. The adjustment is fixed by means of a set screw through the rim of the nut which impinges on a brass bushing and presses it against the thread of the adjusting collar. The thrust of the drill is taken on ball bearings, as shown at D in Fig. 5. The gib pressure is reinforced by

especially in nickel ores. The mines at Sudbury, Ontario, Canada, yield anywhere from a trace to one or more ounces per ton of nickel ore. One company realizes annually about 3000 ounces of palladium from 300,000 tons of nickel ore, in addition to various amounts of copper, silver, gold, platinum, endium and rhodium.

Fire fighting is a science for which this country has a reputation, but it can well afford to investigate an improvement recently adopted in England. The Manchester fire department now has a self propelling fire

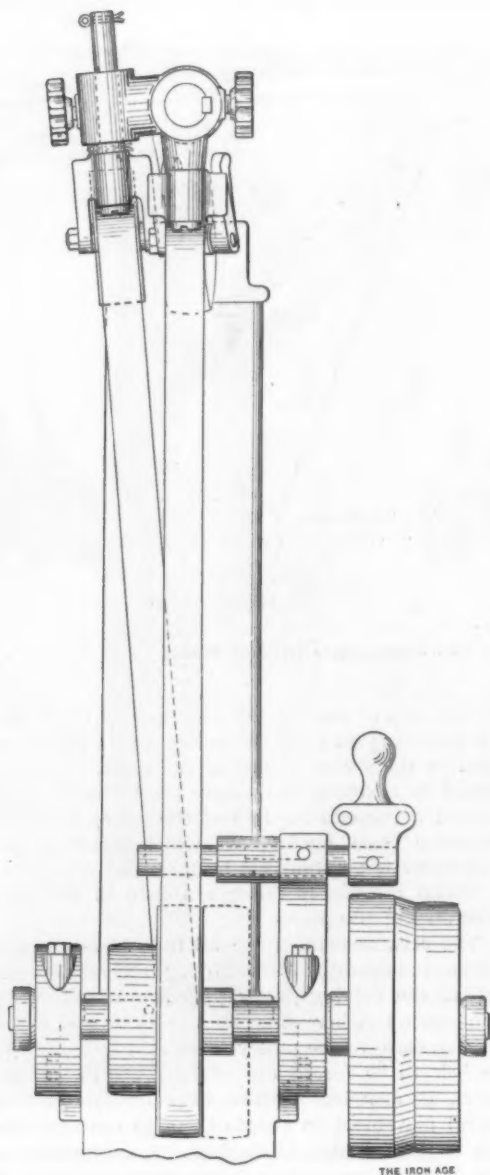


Fig. 4.—Showing the Arrangement of the Idlers and the Manner of Shifting the Driving Pulley.

two set screws to be employed when drills from  $\frac{5}{8}$  to  $\frac{3}{4}$  inch are used to prevent any possibility of the slipping of the spindle arm on the column due to the pressure necessary to drive the larger drills.

Recent tests with this drill developed the following results: A 5-16 inch drill driven at 1740 revolutions per minute drilled through cast iron  $1\frac{1}{4}$  inches thick in five seconds, which is at the rate of 15 inches per minute. A 7-16 inch drill driven at 780 revolutions per minute drilled through cast iron  $1\frac{1}{4}$  inches thick in seven seconds, at the rate of 10 inches per minute. A  $\frac{3}{4}$ -inch drill driven through cast iron  $1\frac{1}{4}$  inches thick in 15 seconds, at the rate of 5 inches per minute.

The metal palladium, like platinum, is hard, ductile, malleable and unaffected by chlorine and hydrogen sulphide gases, but is cheaper, being found quite abundantly,

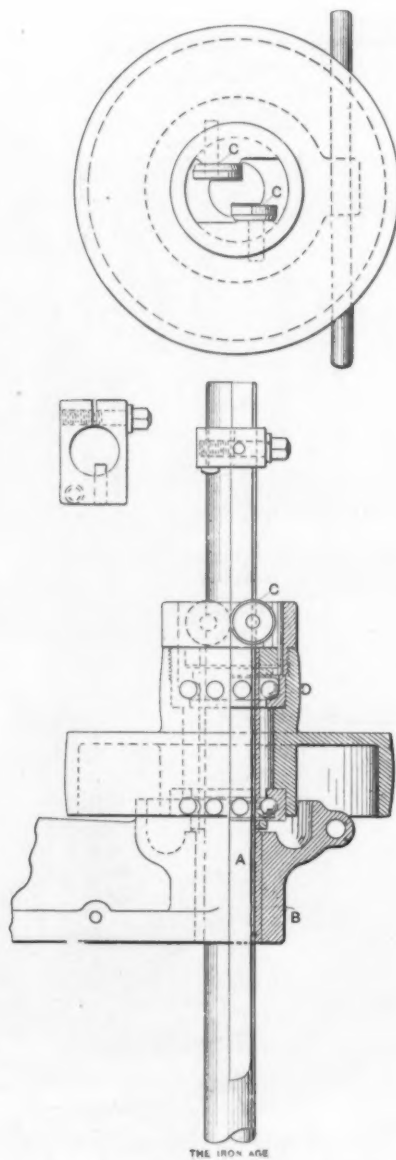


Fig. 5.—Detail of the Cone Pulley on the Spindle.

engine, which carries, in addition to its regular equipment, a dynamo, an air pump and telephonic apparatus. The purpose of this equipment is to make it possible for firemen to enter smoke filled buildings, primarily to rescue persons who may have been entrapped or overcome by smoke, and also to investigate the conditions for the better directing of operations in combating the fire. A hood is slipped over the head of the fireman, which is connected by hose with the air pump to supply him with fresh air, just as a submarine diver is supplied while under water. There is also in the hood a telephone transmitter and receiver, so that the fireman may communicate with his chief, to call for aid or report what he finds. He carries a powerful incandescent lamp to penetrate the smoke and assist him to find his way or locate persons or objects. The dynamo will light eight 32 candle-power lamps and, with the air pump, is driven by belt from the fly wheel of the engine.

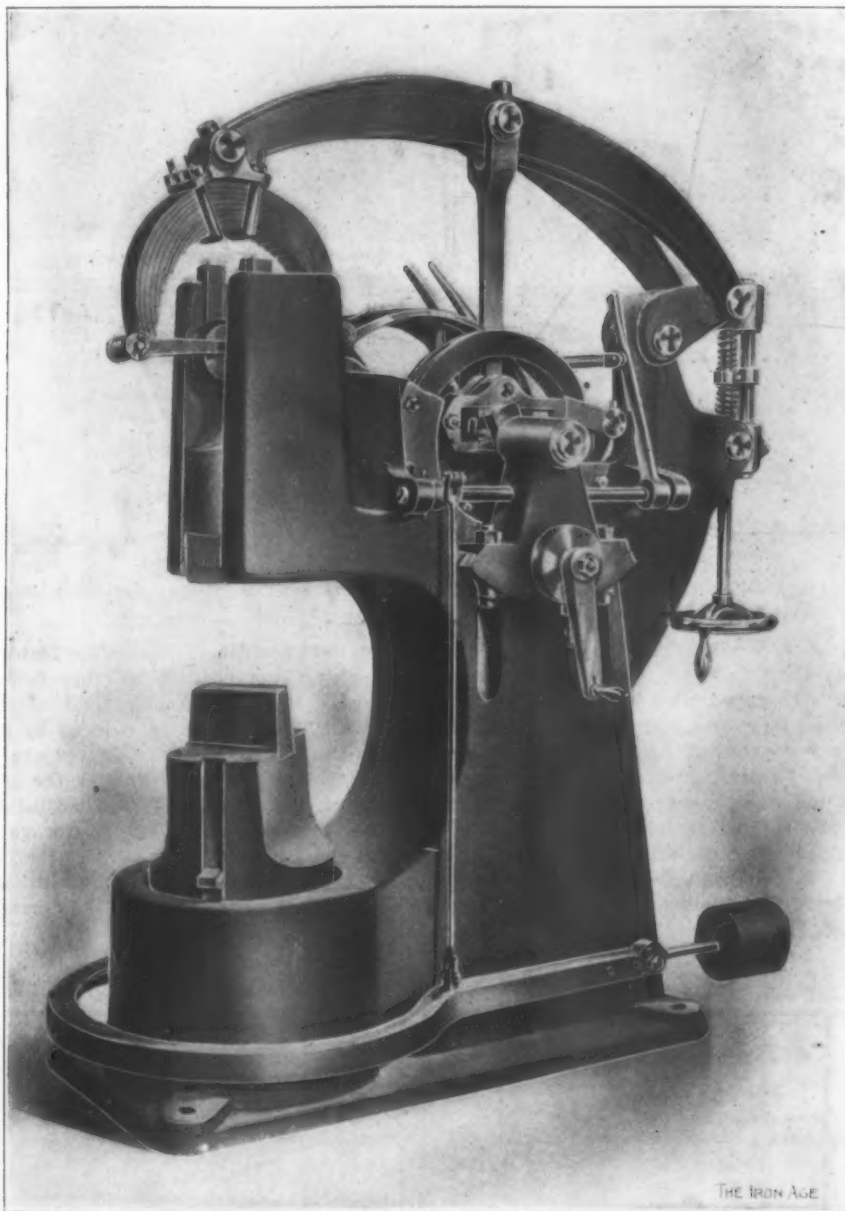


### The Thor Power Hammer.

A new power hammer has been designed by the American Machine & Mfg. Company, Cleveland, Ohio, which has been given the trade name used in the title. This hammer is composed, as usual, of a frame, an anvil, a hammer head, a lever to which the hammer head is attached by means of a spring and a crank shaft acting on the lever. In the plane of the lever there is supported in the frame a ring of comparatively large diameter, through which the crank shaft passes. To the ring is jointed an arm, which is connected to the crank of the shaft by a yoke, in the slot of which it reciprocates

struction is that the hammer ascends slowly and descends quickly as the crank at the rotation of the shaft acts on the outer part of the arm when the hammer head ascends, but on the inner part of the arm when the hammer head descends.

This construction, it will be seen, gives a belt driven spring power hammer, that during full running affords variable strengths of blow and variable lengths of stroke for different sizes of forgings to be handled. It has an attachment for stopping the drop at the top of stroke in case of die and tool forging. The makers describe it as a practical, easily handled, many sided and durable machine that will forge fast and well, is equally applicable



The Thor Power Hammer, Built by the American Machine & Mfg. Company, Cleveland, Ohio.

during the rotation of the crank, a journal or sliding block embracing the crank. The arm is oscillated by this movement, and is connected to the lever by links. The length of the stroke is adjusted by revolving the ring.

By rotating the ring toward the right the angle formed between the arm and a perpendicular through the shaft will be decreased, the stroke of the arm, and consequently that of the lever and the hammer head, being thus made smaller. By rotating the ring toward the left the angle mentioned will increase, and the stroke of the arm and hammer head will be greater. By means of the screw and hand wheel at the rear, the operating arm, or lever, is kept horizontal, when changed from small to large work, thereby keeping the full force of the blow in a horizontal plane. The advantage of this con-

to large or small work, and also good for drop forging, is easy to apply and handle, requires but small space and gives a strong blow compared with the power required.

The following are the dimensions and capacities of the two sizes in which it is made:

	Style C.	Style D.
Weight of drop, pounds.....	170	95
Capacity of forging.....	6 inches square.	4 inches square.
Capacity of forging, general.	4 inches square.	3 inches square.
Drop, maximum.....	9 inches.	5 inches.
Revolutions per minute.....	175	225
Horse-power required.....	4	1.5
Total weight.....	4,200	1,725

The type Ca is capable of striking a blow of 801.8 foot-pounds, in consequence of which it will in many places make a good, cheap substitute for a steam hammer.

### The Sturtevant Pattern Shop and Pattern Handling System.

The new building in which the B. F. Sturtevant Company, at Hyde Park, Mass., now makes and stores its patterns is arranged in an admirable manner, and the system for the handling of patterns is one of considerable interest. The building is about 148 feet long by 80 feet wide, and is divided transversely into two parts, one-half accommodating a flask shop and a pattern shop, being two stories high, while the other half is used as a pattern storage and has intermediate floors, making four stories in all. In the center of the building is an elevator

cident. The benches, each accommodating two men, are arranged along the sides of the building, so that the workmen receive light over their left shoulders. The benches are 2½ feet wide by 16 feet long, and behind each is a work table of the same length, 4 feet wide. The benches are supported by cast iron legs of special design, have maple tops and are equipped with Emmert vises. A drying chamber for glued work is provided, which receives warm air through the general heat flue from the Sturtevant heating apparatus below.

The first floor of the pattern storage half of the building is of concrete and is intended for the storing of heavy cast iron patterns. It is served by industrial rail-

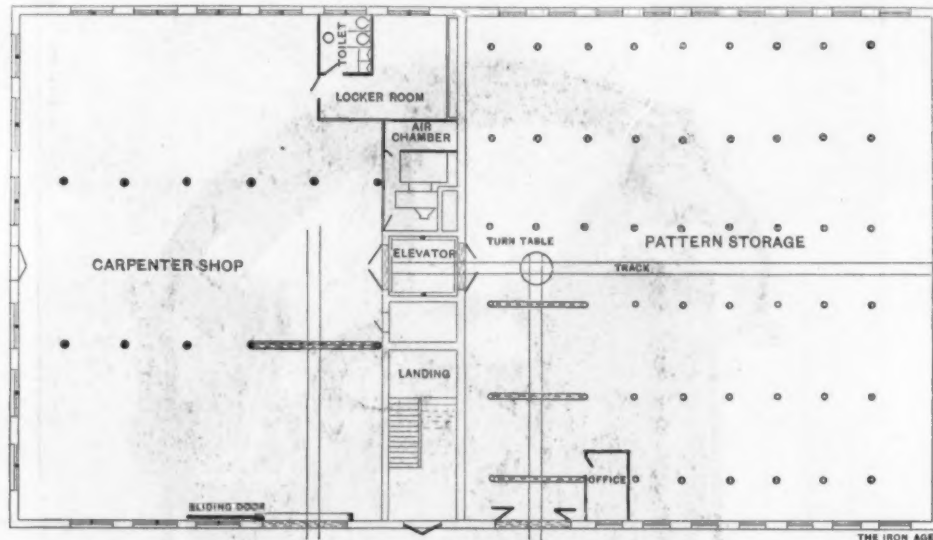


Fig. 1.—Plan of New Pattern Building of B. F. Sturtevant Company, at Hyde Park, Mass.

shaft serving all floors, having doors on opposite sides for both departments.

The flask shop is equipped with band, cross cut and splitting saws, boring machines and a lathe, all driven by a 10 horse-power Sturtevant motor suspended from the ceiling. Industrial railway tracks from the foundry run directly into this room across a distance of about 40 feet, and with an overhead transverse track facilitate the handling of flasks and patterns. The lumber for their manufacture is unloaded from cars directly in front of the building. In this room there is also a metal

way tracks and a turntable for transferring material to the elevator and thence to other floors. Communication between the pattern shop and storage department is direct. The fire risk is reduced by a double system of fire doors. The pattern shelves are supported by cast iron brackets clamped around the pipe columns which support the floors and are adjustable to any height. Shelves on the walls afford storage space for smaller patterns.

In connection with the description of this shop the system of handling patterns is interesting. New patterns

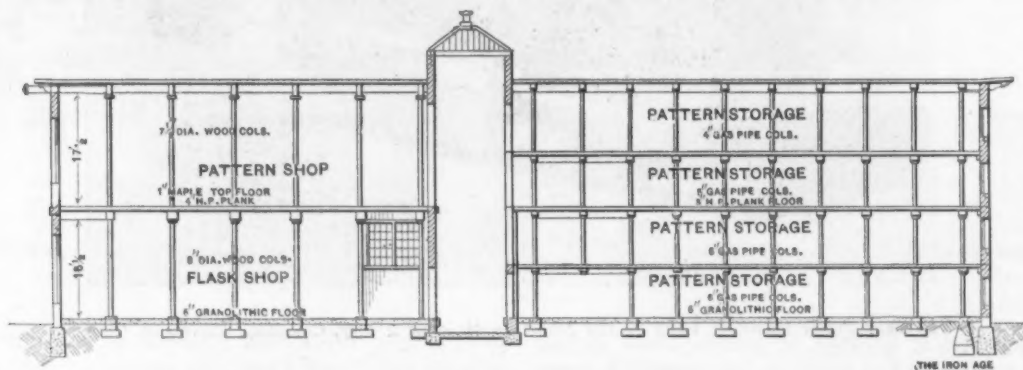


Fig. 2.—Elevation of the Pattern Building.

pattern department equipped with the necessary machine tools. At the rear are the locker, wash and toilet rooms for the building.

On the second floor is the pattern shop, abundantly lighted on three sides and equipped with a full complement of tools, including one single and two double saw benches and two band saws, a buzz planer, a double surfacer, five lathes, one of which is a 66 inch x 11½ foot gap lathe; a drill press, a core box machine, numerous wood trimmers, &c. These machines are driven by two 10 horse-power motors, both being required for ordinary work, but one always serving as a relay in case of ac-

are numbered consecutively upon the drawings as made. Patterns for gray iron castings take a number without prefix; patterns for brass castings take a number preceded by 0; those for steel have the number preceded by 00, and so on with a different prefix for each material. The numbers are entered in a blotter having columns for date, pattern number, name of pattern and drawing number. This record is afterward transcribed into the "Pattern Record" book by the record clerk in the drafting room. At the time of taking out a new pattern number a "Pattern Cost Card," Fig. 6, is filled out. This is sent with the drawings to the foreman of



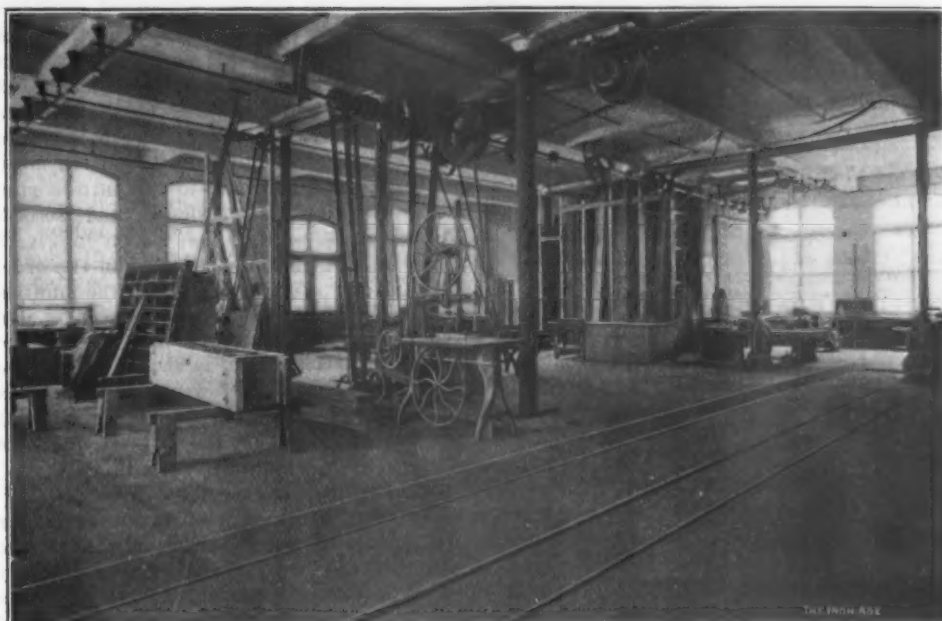


Fig 3.—The Flask Shop,  
First Floor.

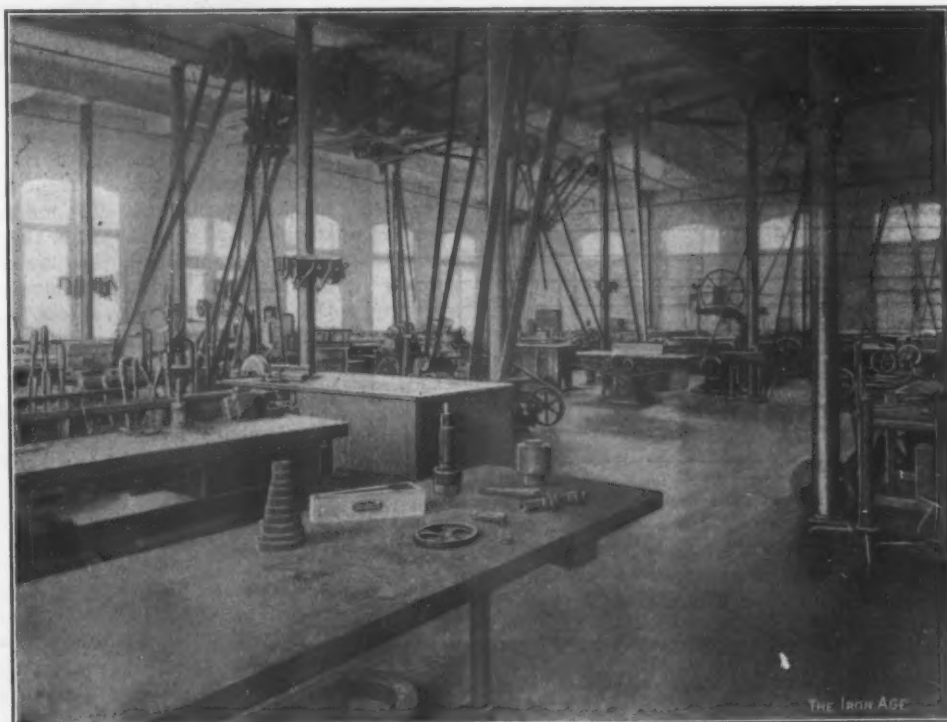


Fig. 4.—The Pattern Shop,  
Second Floor.



Fig. 5.—Typical View in  
Pattern Storage, Third  
Floor.





### The New Badger State Punch and Shear.

A new combined punch and shear being built by the Badger State Machine Company, Janesville, Wis., that embodies several unique features is illustrated herewith. The specific departure of this machine from other triple punches lies in the punching mechanism, which is so constructed that by inserting a sliding key in different keyholes in the front of the machine any one punch may be operated to the exclusion of the others, or by inserting keys in two or three holes two or all three punches may be operated.

The principle of the action of this part is shown in the detail, Fig. 2. The tails *a*, projecting downward from the eccentric yokes encircling the main head shaft, are slotted near their lower ends to receive pins, *b*, in the punch heads. These slots are long enough to allow the tail to reciprocate without moving the head when the

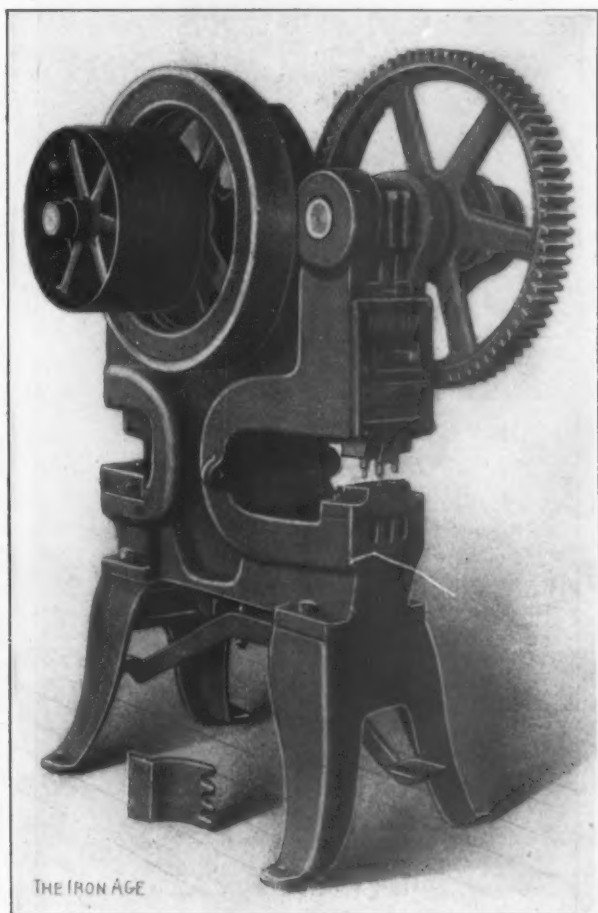


Fig. 1.—The New Badger State Combined Multiple Punch and Shear.

latter is in its upper position, this being the position which it normally maintains. By inserting a key, *c*, between the lower rounded end of one of the tails and the base of the keyway in the punch head the punch is brought into action. It will be observed that the force of punching does not take effect on the pins *b*, these being merely used to guide the lower ends of the tails when the punch head is not active. The rounded lower ends of the eccentric tails allow for their rocking due to their slight angular motion. The Badger State Machine Company was allowed a patent on this feature in March, 1904.

The body of the machine is cast in one solid piece, all shafts, pins and king bolts being made of hammered tool steel. Both shear and punch are controlled by clutches that are operated by convenient foot treadles and that stop automatically at the top of the stroke. The punch is provided with a stripping attachment and adjustable gauge to regulate the distance of the holes from the edge of the sheet. The machine illustrated weighs 2500 pounds, and has a capacity of punching a  $\frac{1}{2}$ -inch hole

in  $\frac{1}{2}$ -inch plate, cutting off  $\frac{1}{2} \times 4$  flat iron bars and 1-inch rounds, and will punch to the center of a 24-inch sheet. It is being built also in larger and smaller sizes and capacities, and for either hand, belt or motor drive.

### The Bucyrus Steam Shovels for Panama.

The eleven steam shovels contracted for by the Panama Canal Commission from the Bucyrus Company, South Milwaukee, Wis., embody the latest improvements in steam shovels. There are five 70-ton and six 95-ton. The dipper of the 70-ton shovel has a capacity of  $2\frac{1}{2}$  to 3 cubic yards, and that of the 95-ton shovel 5 cubic yards, which means that under favorable conditions 12 yards can be excavated in a minute with the former and 20 yards with the latter. Some of the improvements embodied in the latest 70-ton shovel built by the company are as follows:

That portion of the boom which is subjected to the greatest strain has a double box girder. The boom engines are protected by a covering of heavy steel plate from injury by dirt or by the striking of the hoisting chain. The boiler is covered with magnesia blocks, which are incased in a planished sheet steel jacket securely

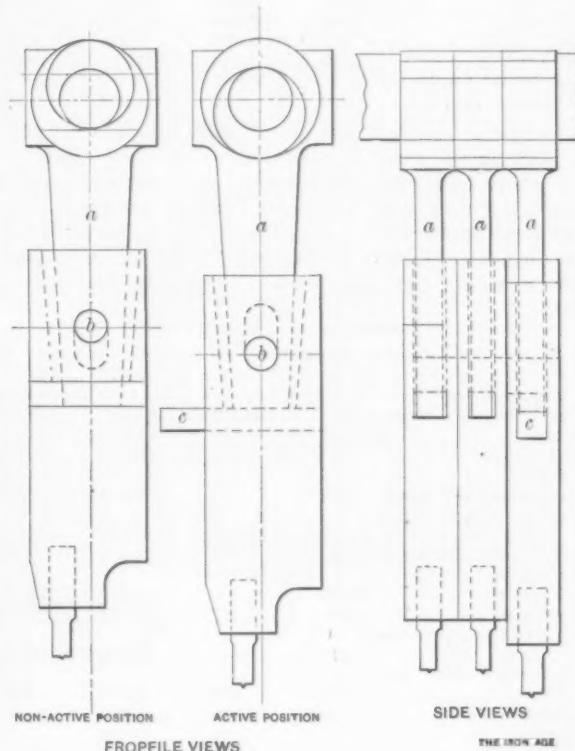


Fig. 2.—Detail of the Punch Head Mechanism.

fastened, which is so arranged that sections of it may be taken off without disturbing the rest. The frame of the house is entirely of steel. The hoisting friction is operated by a steam thrust cylinder, which both facilitates its operation and increases the speed at which the shovel can be worked. Among the distinguishing features of the 95-ton steam shovel are its clear lift from rail to bottom of dipper door, when open, 17 feet; width of cut at 8-foot elevation, 54 feet; length of car over all, 41 feet 7 inches; width of car over all, 10 feet; size of main engines, 14 x 16 inches; type of swinging gear, independent reversible engines; boom, all steel; type of thrust motion, independent reversible engines; size of hoisting chain,  $1\frac{1}{2}$  inches. The contract involves the dismantling, packing, shipment and erection, and testing by crews furnished by the contractors. The Bucyrus Company included in its proposal a condition that the Government assume the responsibility for the transportation of the shovels after delivery at the ship's side in New York City.

### September Iron and Steel Exports and Imports.

The exports of iron and steel in September, according to the report just issued by the Bureau of Statistics of the Department of Commerce and Labor, exceeded those of any previous month of this year. Taking the commodities for which quantities are given, the exports for September were 131,886 gross tons, as compared with 101,124 tons in August, 108,039 tons in July, 119,179 tons in June and 107,646 tons in May. The detailed figures for the month and nine months are given in the following table:

Commodities.	September.		Nine months.	
	1904.	1903.	1904.	1903.
Pig iron.....	8,774	1,118	36,413	11,982
Scrap .....	5,190	202	22,214	3,130
Bar iron.....	1,541	1,304	22,383	15,283
Wire rods.....	287	683	14,042	19,043
Steel bars.....	2,350	532	18,848	13,784
Billets, ingots, blooms.....	26,175	37	262,626	1,056
Hoop, band, scroll....	32	126	2,144	1,428
Iron rails.....	.....	.....	1,614	143
Steel rails.....	62,375	6,487	272,553	11,611
Iron sheets and plates	276	1,693	3,382	4,358
Steel sheets and plates	6,751	518	30,399	9,082
Tin plates andterne plates .....	723	1	5,385	168
Structural iron and steel .....	6,159	1,895	37,351	22,565
Wire .....	8,046	6,110	80,743	76,234
Cut nails.....	912	1,059	7,521	6,789
Wire nails.....	1,969	1,950	20,580	22,358
All other, including tacks .....	326	167	2,193	1,636
Totals.....	131,886	23,882	840,391	220,650

Taking the same class of articles as those treated in the above table, the imports from one month to another now show very little difference. The figures for September were 21,006 gross tons, as compared with 20,878 tons in August and 21,891 tons in July. The detailed figures for the month and nine months are given in the following table:

Commodities.	September.		Nine months.	
	1904.	1903.	1904.	1903.
Pig iron.....	8,684	16,414	60,627	547,386
Scrap .....	1,121	1,964	15,057	74,103
Bar iron.....	1,128	2,362	15,803	31,068
Rolls .....	2	2,196	34,232	87,273
Hoop, band and scroll	702	42	1,946	1,433
Billets, slabs, bars, &c., steel in forms n.e.s.	647	13,530	8,814	243,211
Sheets and plates....	159	1,057	3,581	7,895
Tin plates andterne plates .....	6,793	2,440	55,588	36,212
Wire rods.....	1,302	1,443	12,034	15,362
Wire and articles made from .....	179	470	3,016	3,749
Structural iron and steel* .....	260	893	5,764	4,823
Chains .....	22	24	292	319
Anvils .....	7	21	98	171
Totals.....	21,006	42,856	216,852	1,053,905

\* Included in "All other" prior to July 1, 1903.

The total value of iron and steel and manufactures thereof, not including ore, exported in September was \$11,150,815, as compared with \$10,430,331 in August. The total value for the nine months ending September 30 was \$92,565,937, against \$72,714,360 in the corresponding period of 1903. The total exports of iron ore for the nine months only amounted to 129,740 gross tons. Taking the imports of iron and steel and manufactures thereof, not including ore, the September values aggregated only \$1,841,174, and for the nine months ending with September \$16,591,000. The imports of iron ore for the nine months were only 294,203 gross tons, as compared with 836,417 tons in the corresponding period of the previous year.

C. B. Rittenhouse, who for four years was buyer for Dunham, Carrigan & Hayden Company in New York, has succeeded Charles Cassils in Montreal, Canada, representing the United States Steel Products Export Company. Mr. Rittenhouse was for several years in the New York office of the Carnegie Steel Company before the formation of the United States Steel Corporation.

### The Putnam 32-Inch High Speed Lathe.

In the tool steel tests at the St. Louis Exposition the 32-inch high speed engine lathe shown in the accompanying illustrations was used. It is a very powerful tool, built by the Putnam Machine Company, Fitchburg, Mass., and is capable of withstanding cutting the equivalent of 50 horse-power. In tests already made it has removed stock at the rate of 3 tons an hour. Among its several interesting features is the provision whereby all the driving mechanism from the clutch coupling to the internal gear

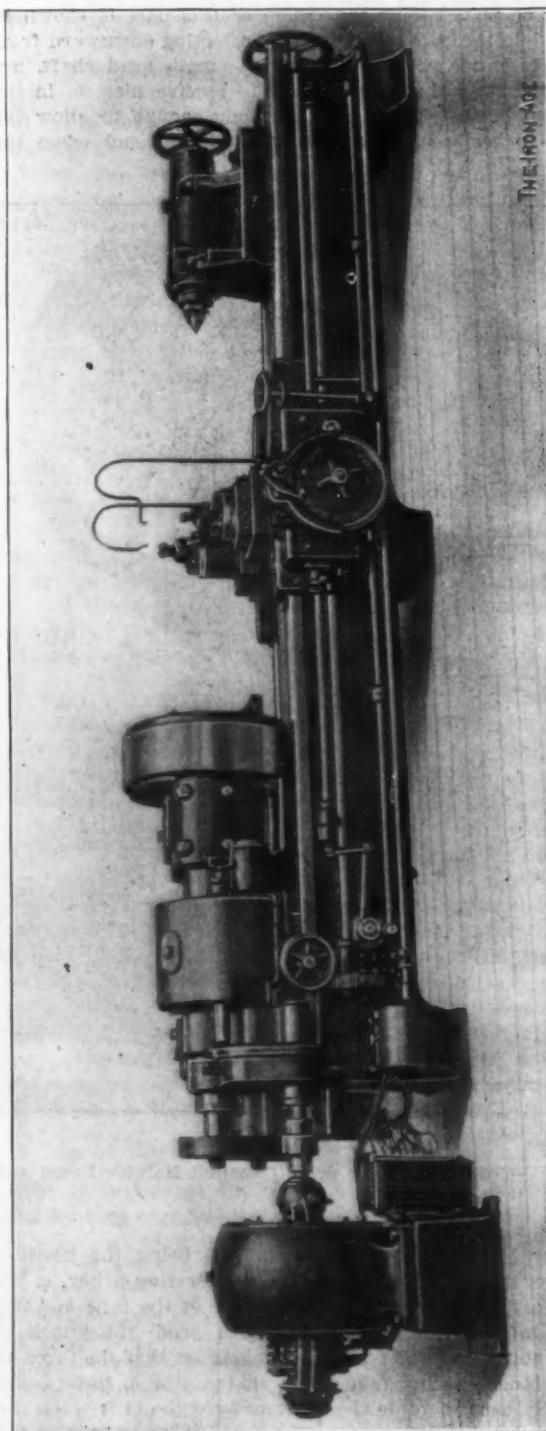


Fig. 1.—The Putnam 32-Inch Lathe Used in the High Speed Tool Steel Tests at the World's Fair.

of the face plate is submerged in oil. Another interesting device is the clutch arrangement for throwing the feed in and out, the feed being operated from a pinion on the end of the main spindle. Six longitudinal feeds are provided, ranging from 1-16 to 1/2 inch, and the same number of cross feeds from 1-32 to 1/4 inch.

A variable speed motor built by the Northern Electrical Mfg. Company, Madison, Wis., drives the lathe, though the same machine is built with belt drive for use where electric power is not available. The entire train of gears runs in oil, being contained in an oil tight case, and all bearings are oil tight. The gearing is shown in



plan in Fig. 2, all parts being revolved into a common plane. The power is transmitted from the motor through a clutch coupling to a pinion meshing with a gear on a secondary shaft, B. This shaft carries a pair of sliding gears which mesh one or the other of two gears on the shaft C with the face plate pinion D, affording two mechanical changes of speed which double the range of speeds provided by the motor. The sliding gears are operated by a longitudinal pull handle at the front of the head.

The feed is actuated from a pinion, F, on the end of the main spindle E. This pinion and the pinion G on the feed stud with which it meshes may be interchanged, thus giving two changes of feed, multiplying by two the three changes resulting from the nest of three gears S S S on the feed stud H. Any one of these three gears may

ceives its power from the feed drive only when the positive clutch K is in use, connecting the hollow shaft and the screw. The quick return is driven from the face plate, there being a second pinion, M, on the side opposite the driving pinion D, which transmits power to a gear, N, loosely mounted on the screw. This train of gearing runs continuously. The quick return is accomplished by throwing in a friction, L, which acts with the throwing out of the positive clutch. Thus the feed screw may be driven by the positive clutch in feeding the tool, or by the friction in the quick return of the carriage, or may remain idle with neither clutch in action. It is impossible for both clutches to be thrown in at once, which prevents possible accidents resulting from the carelessness of the operator. The clutch mechanism is controlled by the horizontal lever on the front of the head manipu-

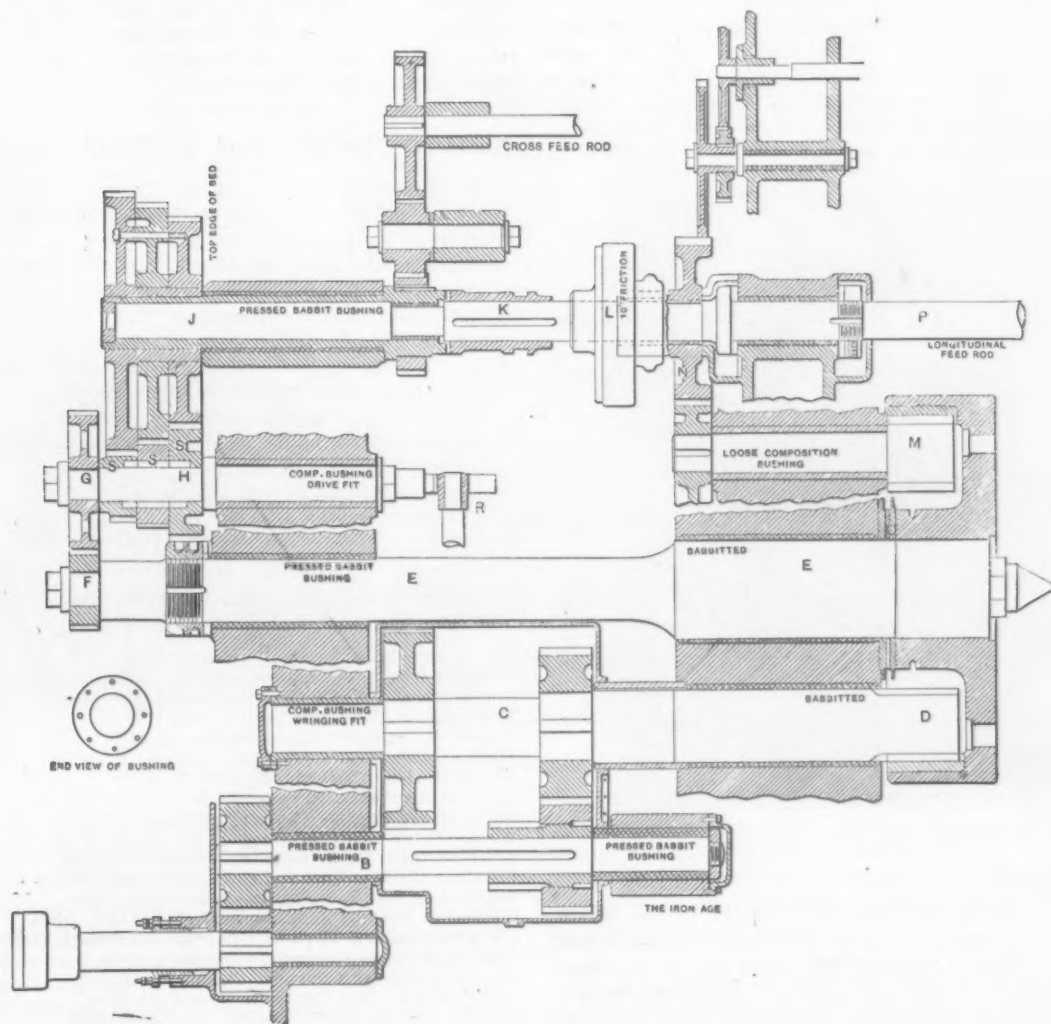


Fig. 2.—Development of the Gearing in the Head of the Putnam 32-Inch Lathe.

be brought into action by means of an internal clutch. The necessary power for the feed is transmitted through a gear meshing with one on a hollow shaft, J, which is a continuation of the feed screw P and is connected with it by a positive clutch, K, when the feed is thrown into action. Changes of feed are obtained through the nest of gears by manipulating the wheel seen at the front of the lathe at the head, the wheel being attached to a shaft terminating in a pinion, R, which engages a rack on the clutch rod. An index plate on the wheel, in connection with a pointer on the lathe bed, indicates which of the three feed gears is in mesh, or whether the internal clutch is in one of its two neutral positions. The heavy longitudinal feed screw P is located midway between the ways and engages a solid bronze nut in the carriage. This position of the screw is considered best where such heavy demands are made upon it and where flat ways are used, the strain being more equally divided than when the screw is at one side of the bed.

As already stated, the screw is in two parts and re-

lated through a rock shaft from a lever on the apron.

The lower horizontal rod on the front of the lathe in Fig. 1 connects with the motor controller and is operated from the hand wheel on the apron through bevel gears, one of which is splined on the rod. The rod just above provides an automatic stop motion and works in conjunction with the splined rod for the feeds and quick return, the latter being operated by hand. By this system very complete control of the feed is obtained, the operator being able to stop the work practically instantaneously. The longitudinal feed is in one direction only, and the cross feed is in both directions.

The spindle E is tapered to fit in the face plate with the larger end of the spindle on the outside, so that the greater the strain put upon the spindle the firmer it fits in the face plate. The wearing bearing between the face plate and the head stock consists of three rings, O, the outer two of bronze, the center of steel. The bronze rings are larger in diameter than the steel ring and dip in a reservoir of oil. As the rings are grooved radially

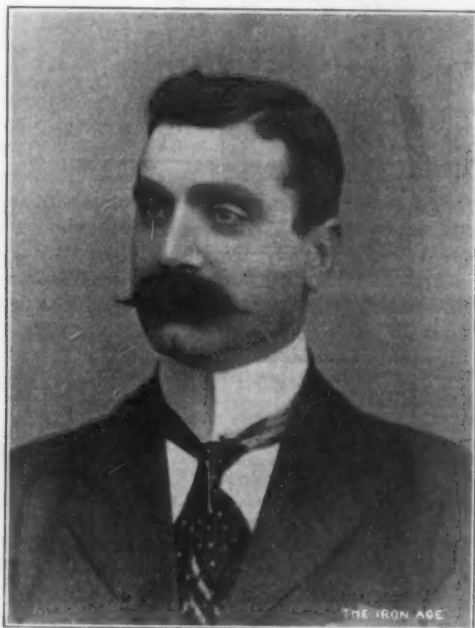
complete lubrication of their wearing surfaces is obtained.

Oil lubrication of the tool is furnished by a special centrifugal pump located in the middle leg of the machine, which contains the oil reservoir. The oil is taken to each of the two tool posts by means of pipes, as shown in the illustration. Suitable pans are provided for catching the oil after use and returning it to the reservoir.

The maximum cutting speed is 100 feet a minute. The feeds are 1-16, 3-32, 9-64,  $\frac{1}{4}$ , 11-32 and  $\frac{1}{2}$  inch. The front tool post has a longitudinal adjustment in the block, which is desirable in certain operations. The feed handle may be placed in its neutral position, and the carriage operated by hand by the wheel at the tail end of the feed screw.

### Sir James Power.

Traveling with the members of the Iron and Steel Institute, who are now visiting America, there is a man who is distinguished in his own land and is making a chain of acquaintances and gaining a fund of knowledge while in this country that will doubtless prove of inestimable value to him in the growth of his career as



SIR JAMES A. POWER.

a public man at home. He is Sir James Power, mayor of Waterford, Ireland, a man of forceful character and ambition. While in this country he is the special guest of the president of the Iron and Steel Institute, Andrew Carnegie. He is a man who has attracted the attention not only of all the members of the party, but also of those, particularly the municipal, State and Government officials, who have welcomed the members of the Institute along their journey.

At the reception given to the visitors at her home in New York by Mrs. Carnegie, one of the secrets of the attachment which he holds for Sir James was confidentially confessed to a few of the guests by Mr. Carnegie. In showing his own apartments to his personal friends Mr. Carnegie proudly displayed a photograph which occupies a conspicuous position on his desk, bearing the inscription, "The Hero-Mayor of Waterford." The story of Sir James' heroism dates back about two years. At a great conflagration at Waterford, in which an entire square of buildings was completely consumed, two men were overcome in one of the upper stories of one of the burned buildings. Sir James rushed to the rescue, but, in view of the rapid spread of the flames, was forced to abandon the stairways and carry his men to the windows. By tying bed clothing together he succeeded in lowering his men safely to the street, but to save himself he was compelled to jump. It was a 30-foot leap, and he was carried unconscious to a hospital, where

he remained six weeks. For this act of conspicuous bravery he was publicly presented with a testimonial. Shortly afterward he was elected mayor of his city, and one of his first official acts was to organize an efficient fire brigade.

Mr. Carnegie delights in telling this story and in paying special honor to Sir James at all of the public functions attended by the Institute. At the reception of the Institute by President Roosevelt last Saturday afternoon, as Sir James passed between the lines formed by Mr. Roosevelt and his wife and daughter on one side and Mr. Carnegie and his associates in the council of the Institute on the other, Mr. Carnegie stepped forward and introduced him personally. President Roosevelt gave him a most hearty welcome and chatted with him several moments while the line came to a standstill, and Mr. Carnegie then invited Sir James to remain in the room with the official party. He was knighted by King Edward during his recent trip through Ireland, when the King visited the city of Waterford and paid a special compliment to its "Hero-Mayor."

### National Machine Tool Builders' Convention.

It is officially announced that the next convention of the National Machine Tool Builders' Association will be held in New York on November 15 and 16, with headquarters at the Hoffman House, Madison Square. The officers are as follows: President, William Lodge of Cincinnati, Ohio; first vice-president, W. P. Davis of Rochester, N. Y.; second vice-president, F. E. Reed of Worcester, Mass.; secretary, P. E. Montanus of Springfield, Ohio, and treasurer, Enoch Earle of Worcester, Mass.

Though young in years, the association has the proud distinction of including in its membership such important companies as the following:

Hendey Machine Company, Torrington, Conn.  
B. F. Barnes Company, Rockford, Ill.  
Detrick & Harvey Machine Company, Baltimore, Md.  
Baush Machine Tool Company, Springfield, Mass.  
P. Blaisdell & Co., Worcester, Mass.  
Draper Machine Tool Company, Worcester, Mass.  
Prentice Bros. Company, Worcester, Mass.  
F. E. Reed Company, Worcester, Mass.  
Whitcomb Mfg. Company, Worcester, Mass.  
Woodward & Powell Planer Company, Worcester, Mass.  
Norton Emery Wheel Company, Worcester, Mass.  
C. E. Sutton Company, Toledo, Ohio.  
Flather & Co., Incorporated, Nashua, N. H.  
Mark Flather Planer Company, Nashua, N. H.  
Binsse Machine Company, Newark, N. J.  
Gould & Eberhardt, Newark, N. J.  
W. P. Davis Machine Company, Rochester, N. Y.  
W. A. Wilson Machine Company, Rochester, N. Y.  
American Tool Works Company, Cincinnati, Ohio.  
Bradford Machine Tool Company, Cincinnati, Ohio.  
Bickford Drill & Tool Company, Cincinnati, Ohio.  
Cincinnati Machine Tool Company, Cincinnati, Ohio.  
Cincinnati Milling Machine Company, Cincinnati, Ohio.  
Cincinnati Planer Company, Cincinnati, Ohio.  
Cincinnati Shaper Company, Cincinnati, Ohio.  
Dietz Machine Tool Company, Cincinnati, Ohio.  
Fosdick Machine Tool Company, Cincinnati, Ohio.  
Greaves, Klusman & Co., Cincinnati, Ohio.  
Hisey-Wolf Machine Company, Cincinnati, Ohio.  
Lodge & Shipley Machine Tool Company, Cincinnati, Ohio.  
R. K. LeBlond Machine Tool Company, Cincinnati, Ohio.  
King Machine Tool Company, Cincinnati, Ohio.  
Queen City Machine Tool Company, Cincinnati, Ohio.  
Rahn, Mayer, Carpenter Company, Cincinnati, Ohio.  
Schumacher & Boye, Cincinnati, Ohio.  
Hamilton Machine Tool Company, Hamilton, Ohio.  
Fairbanks Machine Tool Company, Springfield, Ohio.  
Springfield Machine Tool Company, Springfield, Ohio.  
Owen Machine Tool Company, Springfield, Ohio.  
Jones & Lamson Machine Company, Springfield, Vt.  
Ridgway Machine Tool Company, Ridgway, Pa.

A "bar which cannot be sawed through" has been patented by a Pennsylvania inventor, specially intended for use in penal institutions. The bar has a number of longitudinal holes near the surface which are filled with glass. This is very severe on the saw, and is counted upon to discourage the sawyer. The expense of manufacturing such bars would be somewhat above that for the ordinary type, and the diameter would necessarily be increased to allow for the glass, an increase which would in itself deter most criminals from attempting the task of cutting through it.

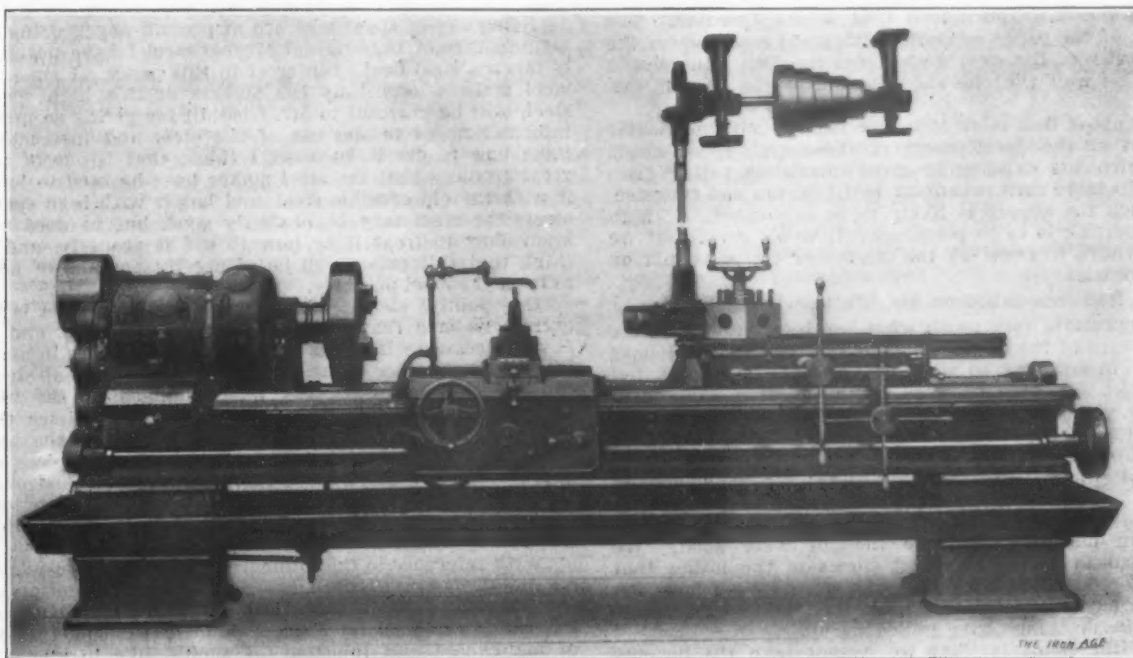


### The American 22-Inch Lathe.

The 22-inch lathe shown in the accompanying illustration is primarily intended for roughing and boring, hence has the entire screw cutting mechanism omitted. The feeding mechanism, while of the same principle as that regularly furnished by the builder, the American Tool Works Company, Cincinnati, Ohio, is of a special nature. There are seven carriage feeds, ranging from 0.2 to 0.015, these being graded for the greatest efficiency in that character of roughing and boring for which this lathe was designed.

The patent geared head is of a simple, powerful and efficient construction. Through a lever shown on the front four speeds are obtained with only six gears, making it possible to use gears of very wide face and large diameters, so that the mechanism has sufficient strength to transmit the maximum power delivered to the machine by a 6-inch double belt. The four speeds obtainable

of the turret and is extremely valuable in boring operations. It consists of a symmetrical housing containing miter gears, which actuate a spindle with ball thrust bearing, carrying the boring bar. The spindle is made to revolve from a separate overhead countershaft, as shown in the illustration, being connected by a telescopic rod having universal joints, so as to allow any movement of the turret slide. The boring spindle revolves in the opposite direction to the main spindle on the head, which is an obvious advantage. The boring spindle has five rates of speed through the cone pulley on the countershaft, giving proper gradation to obtain the best results in the boring for which the lathe is intended. Whenever it is desired to use another face of the turret the telescopic rod allows the latter to be revolved without disturbing the drilling attachment. The boring tool is supplied with oil drawn by an auxiliary pump up through the turret stem and boring bar. The carriage has a similar oil supply for the turning tool. The pan beneath the



The American 22-Inch Lathe.

through the head, in connection with a triple friction countershaft, afford 12 speeds to the spindle, ranging from 5 to 322 revolutions per minute.

The carriage is fitted with a plain block rest, which is provided with an interesting caliper attachment. This consists of a set of four adjusting screws, attached to the plain block rest after the manner of eye bolts, each one, when desired, falling over into corresponding slots in the yoke piece over the front carriage dovetail. By adjusting knurled lock nuts on any one of the four screws and dropping it into its slot the travel of the cutting tool toward the center, and hence the diameter to be turned, is limited at will. This attachment is very valuable in duplicate work which involves not more than four separate diameters.

The hexagon automatic turret is of liberal size, with rapid and easy adjustments; is provided with power feed, driven by sprocket chain from the feed rod, thus giving 14 feeds to the turret, ranging from 0.16 to 0.007. The worm is dropped out of mesh with the wheel by an improved tripping device, adjustable from the front of the machine. The turret slide has an extra long bearing on the bed; the top slide has a 24-inch movement, controlled by a pilot wheel, and is supported on the front end by an improved supporting shoe which slides on the ways and is firmly bolted to the end of the turret slide directly under the cutting tool. It insures accurate alignment in boring and has a gibbed bearing both at the top and bottom of the ways, thus preventing all spring in any direction.

The drilling attachment is affixed to one of the faces

bed catches all waste oil, which is returned to the machine repeatedly.

The lathe is very heavy and substantial throughout to adapt it to the unusually heavy strains which a lathe of this character must undergo.

We have received, through the courtesy of the American Pig Iron Storage Warrant Company, 44 Wall street, New York, a copy of the rules governing sales of pig iron on the New York Produce Exchange, as accepted by its Board of Managers October 20. Under these rules the pig iron sold for future delivery on the Produce Exchange will be known as "contract pig iron," upon sales of which the tender of the Farmers' Loan & Trust Company's certificates for warrants of the American Pig Iron Storage Warrant Company, held by the Trust Company, as provided in the rules of the Pig Iron Trade of the Produce Exchange, shall constitute a regular delivery as binding buyer and seller. The rules give the form of the warrants, the form of the delivery order, and full details to govern transactions in such warrants.

The important part which the rivets play in the construction of modern steel steamships is well illustrated by the fact that in the new Cunard liner "Caronia," the largest ship ever constructed in Great Britain, no less than 1,800,000 rivets were used, the total weight represented being about 600 tons. All of the rivets are steel. Some of those used in the bottom, where the keel plating is about 3 inches thick, are 7 inches long, and weigh each 3½ pounds. The greater part of the riveting work was done by hydraulic power.

# THE IRON AND STEEL INSTITUTE.

## THE SECOND AMERICAN MEETING.

### WEDNESDAY AFTERNOON SESSION.

In our issue of last week, page 45, we presented a report of the proceedings of the first technical session of the Institute, held in New York, at the Hotel Astor, on Wednesday, October 26. The second session was held Wednesday afternoon, being called to order at 2.30, E. Windsor Richards presiding.

The paper presented by J. M. Gledhill on "The Development and Use of High Speed Tool Steel" was read by Secretary Bennett H. Brough, the author being absent. The discussion was opened by Prof. Henry M. Howe, who said, in part:

One point that has occurred to me is whether it really has been shown that Swedish iron is necessary or better than equally pure iron that is not Swedish. The author of the paper supports with great positiveness the superiority of the steel made from Swedish irons, but it might be well that he should indicate the line of evidence.

I suppose that most of us are looking with particular interest at the development of these high speed steels from elements existing in great quantities rather than from the more rare vanadium, molybdenum and tungsten, of which the supply is likely to be exhausted. If high speed cutting is to be permanent it would seem that we should have to draw on the commoner elements, not on the rare ones.

Mr. Richards called on Mr. White, who said:

I appreciate very much what has been said about the advantages of the use of high speed steel, because I have derived in my work so much benefit from the use of that invention. I agree fully as to the great advantage of using high speed steel, but I think, unfortunately, the writer of this paper has, no doubt unwittingly, only given us half of the subject. Probably the experience of many of you is the same as has been mine: We commenced to use high speed steel, and we at once found that it had the effect of condemning all our machines. We have had to condemn machines that we thought were good. We have had to make new head stocks to the lathes that seemed good enough before, and even now we have not by any means reached the limit that we can go to, because the machines have pulled us up.

But the point is that we cannot take the benefits of this steel without having specially devised machines, and therefore I think that we should remind ourselves in considering the advantages of this that concurrently with the adoption of high speed steel must come the use of very much superior machines, and therefore it is not fair to give all the credit of these wonderful records to the tool steel when at least one-half of the credit is due to the machines.

Mr. Richards called on H. H. Campbell, who said:

There is one point which is especially interesting, the point that was raised by Professor Howe of Swedish iron being necessary to the best quality. I think that is a very important statement, which should be carefully considered before it is put on record. Is it necessary in the manufacture of any tool steel, as is frequently stated, to have Swedish iron in order to produce the best results?

I think we have reached that point where we should not accept the traditions of the past as being final and conclusive if there is any way of testing the matter.

Our company makes some of this steel of various kinds. We do not think that we make better than anybody else in the world, but in various tests we think that we have made as good as three, or four, or five, or six other makers, and we do not use Swedish stock of any kind. Now, then, are we mistaken in our assumption that it is? What proof is there that any more Swedish iron is necessary to make this better material? If there is any it would be a most interesting investigation to find out the reason why.

The point that has been raised about the machine doing half the work is of course true, but with the special new machines, powerful machines, that we have, it is impossible to speed up the old tool steel; you will take the temper out of the tool. If you are limited by the tool itself the fact that it takes a new machine to get the benefit out of the steel has nothing to do with the case; the credit is due to the steel and not to the machine.

Dr. Matthews, being called on by the Chair, said:

It is not necessary, I think, in order to get good results, to use Swedish iron. There are a great many do-

mestic irons which in analysis compare very favorably, if they are not superior, to many of the Swedish irons.

It seems to me that the tendency with regard to high speed steel has been to force one steel into every use—that you can make one kind of tool steel for all uses—springs, punches and dies.

The most efficient steel for certain classes of cutting is not the most efficient steel for the operating end. However, we must strike an average between what we can make and what we can use to great advantage.

I think the conclusions that Mr. Gledhill has put before us are practically confirmed. We appreciate very highly that he should give us a paper of this kind. The information is very valuable.

Mr. Pye-Smith, in response to an invitation from the Chair, said:

Being one of those who are at present engaged in the manufacture of the original Mushet steel I have naturally taken a good deal of interest in this paper. I am sure steel makers, especially the makers of this high speed steel, will be grateful to Mr. Gledhill for giving so much information as to the use of the steel and instructing them how to use it, because, I think, that is one of the great troubles that the steel maker has; he used to have it with the old crucible steel, and has it with high speed steel; the steel may be perfectly good, but he does not know how to treat it or how to use it properly, and I think that this paper will be of use in speaking of how to treat the steel properly.

One point I should like to speak of: This steel is so extremely hard that, of course, it is also brittle, and it is very necessary to avoid sharp corners or angles in making tools. Another thing, many users of this tool steel, the blacksmiths themselves, have stamped on the tool some letter or something of that sort. Sometimes the letter is stamped quite deeply. The stamp on the tool acts just like a scratch with a diamond on a piece of glass. It gets a start for a fracture, and over and over again I have seen tools broken in this way—broken just where the steel has been stamped—because it has had this start.

With reference to the influence of the various elements on the steel, Mr. Gledhill has not made any mention of the influence of manganese. Mr. Metcalf, in his book on the use of steel, makes a great point of the combination of manganese and tungsten. I should like to know if Mr. Gledhill has carried out any experiments to find out whether the manganese is detrimental or useful, whether it improves the steel.

With regard to molybdenum, my experience seems to be that they have used molybdenum on this side of the Atlantic very much more than they have on the other side. I have come across three or four steels, well known steels, on this side, all of them, I think containing molybdenum, whereas in England, I think, very few, indeed, as to the prominent steels contain that element.

Prof. J. W. Richards, after passing rapidly over several points in the paper, called attention to the difference in practice in England and the United States regarding the use of molybdenum, as follows:

The mention of the use of molybdenum in this paper proves to my mind the difference between the practice followed in Europe and America. On looking over that very fine work on steel recently issued in England by Herbert the word molybdenum is not to be found as far as my reading goes; and the statement that has been made in this meeting that several hundred tons of molybdenum had been used here would tend to establish the difference in the practice of the two countries.

Oberlin Smith spoke, in part, as follows:

I am not a steel maker nor a chemist, but am more especially interested in the mechanical part of it, in the development of tools. Just at present, as it happens, I am establishing an entirely new shop to replace one that burned a short time ago, and the new shop is to have nothing in it but high speed steel. The superintendent has been positively forbidden to let any bars of other steel come in.

With rotary tools, such as lathes, drilling machines, milling machines, &c., weight and strength are needed to avoid the vibration due to the higher rotating speed. To give the inertia that is so necessary in a machine tool, not only do we want heavier spindles, but heavier beds and frames, and everything to resist vibration and give greater stiffness, more stiffness than we have been



used to, and the use of these tools is going to drive the machine tool makers to it.

I think one of the great advantages that is destined to come will be moving tools and stationary tables. We will revert to some of the old types, where the tool moved rather than the work.

In my opinion the development of the milling machine has only begun, and there are going to be wonderful strides. We shall not only get much higher speed, but we shall have the advantage of machines which will do more work in the same time and with much less strain on the working parts.

The great development of motor driving for machine tools comes just at the same time that the development of high speed tools has begun, so that the two things are coming to work together; and in equipping a whole shop with motor driven tools the change is due both to the high speed steels and in getting all the conditions necessary for motor driving—a very interesting problem; and these problems are coming on and are going to tax all the ingenuity of the machine tool people for a good while to come.

The paper on "Acid Open Hearth Manipulation" by Andrew McWilliam and William H. Hatfield, and the paper by Emile Demenge on "The Utilization of Exhaust Steam from Engines Acting Intermittently by Means of Regenerative Steam Accumulators and of Low Pressure Turbines on the Rateau System," were read by title.

The chairman read the following resolution:

That the best thanks of the members be given to the president of the American Reception Committee, John Frits; to the chairman of the Executive Committee, Charles Kirchhoff; to the secretary, Theodore Dwight, and to the members of the Reception Committee, and also to the local committees in New York, Philadelphia, Washington, Pittsburgh, Cleveland, Buffalo, St. Louis and Chicago for the great cordiality of the welcome extended and for the arrangements so ably planned and so successfully carried out for the convenience, instruction and pleasure of the members during the present meeting.

Secretary Brough arose to speak to this resolution, saying, in part, as follows:

It is unusual for an officer of the Institute to second a vote of thanks, but the chairman has been good enough to allow me on this occasion the privilege of doing so, and I consider it a very great privilege, because I have happened to be in New York for the past fortnight and have probably better knowledge than any one else in the room of the vast amount of work that the Reception Committee has undertaken for our instruction and entertainment. These gentlemen have neglected their private affairs, their homes and their families, and have been living here on the premises, working day and night to make these arrangements. The work has been so arduous that I am sorry to say the secretary is suffering from a somewhat severe attack of indisposition as the result of the labors he has had to undergo.

It is not only the Executive Committee to whom we have to be grateful, but we have to remember that in each of the cities the Institute is going to visit there are committees working in exactly the same way. We have here in New York already had a foretaste of what we may expect in the other cities we are going to visit.

When we think of the entertainments that Mr. Wellman and other gentlemen in this room are preparing for us in other cities I begin to believe that the Institute will have to deviate from its usual practice of having only one foreign meeting, and have a subsequent foreign meeting at Carlsbad to enable us to recuperate from the over-eating and overentertainment here.

Responding to the resolution, Prof. Geo. W. Maynard said:

I feel that these very kind remarks are hardly justified. All the members of our committee in New York feel that we have fallen far short of what we would like to have done and what we planned to do, but we have done the best that we can, and we hope that when you leave us you will feel like coming again. I trust you will not allow 14 years to pass before you visit us again.

Sir James Kitson arose and addressed the meeting as follows:

The best thanks of the Institute are due to Mr. Carnegie for acting as chairman of this meeting. Those of us who have preceded him in the chair are well conscious of the fact that it is not the simple duty of conducting the proceedings that lays a burden on the chairman. He has a good deal to organize, and he has a good deal to arrange. It is due in the first place to Mr. Carnegie's initiative that we have had the great honor and the great pleasure of being invited to visit the United States. And I think I may say that it is through him that all these great activities have been sent forth. We heard from Mr. Gayley in his paper this morning of the creation of energy. I do not know whether it was neces-

sary to attempt the creation of energy in the United States, among any section of her citizens, and at least not among that section which controls the magnificent iron trade which we come to admire and to wonder at. But we do know that Mr. Carnegie has succeeded in energizing the energetic. He claims that he owes his success to the fact that he has surrounded himself with and used men much cleverer than himself, and as he is absent from the chair, I think I may take him at his word, and say that the results of this meeting so far have shown that the men who managed his undertakings and the men who managed these meetings are very much cleverer than he is. Therefore, he has been so successful in this organization, and also in his management of our affairs here, I am sure you will join with me in voting that our best thanks be given to him for his conduct on this occasion.

#### The Annual Dinner.

On Wednesday evening the annual dinner of the Institute was held in the grand ballroom of the Waldorf-Astoria, with over 350 participants. In addition to the members of the Institute prominent representatives of the American iron trade from all sections of the United States were present. Prominent among the decorations were the British and American flags, while intermingled with the flowers were brilliant specimens of autumn foliage. The menu was bound in heavy paper covers with an impressionist picture of a blast furnace on the front cover. Inside an allegorical picture of the progress of America from aboriginal conditions to modern civilization faced a representation of a partly completed steel frame skyscraper having the various courses of the dinner set forth on the several stories, ascending to the cigars and coffee and topped with a derrick swinging a beam in place bearing the word "speeches." Scotch airs predominated in the music rendered by an orchestra during the discussion of the menu.

The post prandial exercises were directed by President Andrew Carnegie, who in his introductory remarks dwelt fondly on the bonds uniting the great Anglo-Saxon countries and happily proposed as a record breaker a joint toast to the King of England and the President of the United States, the rulers of two great kindred countries, "both rulers apostles of peace." The toast to the reception committees was proposed by Sir James Kitson, past president, who eloquently extolled American hospitality, to which a response was made by Charles Kirchhoff, chairman of the American Executive Committee, who, among other things, alluded to the fact that the American trade, once so small that it was held in the lap of Great Britain, had grown too heavy to be so handled, and now the iron industries of the two countries were properly advancing side by side. A toast to the Institute's guests was proposed by E. Windsor Richards, past president, to which acknowledgments were made by Rear Admiral Coghlan, United States Navy, and Dr. Alexander C. Humphreys, president of the Stevens Institute of Technology. E. P. Martin, past president, spoke to a toast to the American engineering societies, the response being made by Dr. Henry M. Howe of Columbia University. Dr. Rossiter W. Raymond proposed a toast to the Iron and Steel Institute and its president, which was acknowledged by Mr. Carnegie, who began his remarks by asking all present to join in a silent toast to the memory of Abram S. Hewitt, to whom an eloquent tribute had been paid by Dr. Raymond in the course of his speech. The exercises were concluded shortly before midnight and the assemblage dispersed to the strains of "Auld Lang Syne."

#### THE TOUR.

Early Thursday morning all was activity at the New York headquarters, for the members were preparing to embark on the sightseeing tour of the country. Those who had not visited "the States" since the former American meeting of the Institute were amazed at the progress which had been made in New York City during those 14 years, and it was natural that they should look forward with the keenest expectancy toward viewing the strides made industrially in the interior, where even in 1890 they had seen so much of interest. The itinerary was a most inviting one, as it promised inspection of works whose development since 1890 has been the topic of world wide discussion.



The party left New York in two sections, each having a special train and both leaving at about 10 a.m. The largest section went direct to Philadelphia over the Pennsylvania system, while about 90 members availed themselves of a special invitation of the Bethlehem Steel Company and left via the Central Railroad of New Jersey on a special train for Bethlehem.

#### The Bethlehem Steel Plant.

This trip was a most enjoyable one, for after crossing the State of New Jersey it furnished just a peep into the Lehigh Valley, with its historic furnaces, before arriving at the great steel plant. It was about noon when the train was hauled into the yards of the works, and as it stopped in front of the administration building a party headed by Charles M. Schwab and including E. M. McIlvain, president of the company; A. F. Borie, first vice-president; H. S. Snyder, secretary and treasurer; Arch. Johnson, general superintendent, and A. Halliday and O. C. Acker, assistant general superintendents, received the members with a hearty welcome and a hospitality so genuine that it included a most excellent luncheon, after which appropriate souvenirs were distributed in the form of gun metal match safes. The officers of the company and Mr. Schwab then accompanied the party on a trip about the works which had been arranged and was conducted by General Superintendent Johnson. A train of flat cars, suitably arranged with benches, was used for taking the visitors through the various buildings, and when points of special interest were reached opportunity was given to alight and make careful inspection. The officers were assisted by 28 department heads, who divided the party into groups and showed the members the most courteous attention.

The forge department was the first visited, and the solid hydraulic forging of a 42-inch round ingot, weighing 56,410 pounds, into a 7-inch gun tube was witnessed. At another press a 30-inch round ingot, weighing 39,000 pounds, was forged into a pin for the new Quebec Bridge. The train then proceeded to the open hearth department and the members witnessed the fluid compression of an ingot 35 inches round and weighing 44,000 pounds, made for 5-inch gun jackets for the United States Navy. The gauge pressure was 1500 pounds and the pressure on the metal per square inch was 6130 pounds. At furnaces Nos. 6 and 9 was seen the casting of an armor plate ingot 28 x 18½ x 120 inches in size and weighing 130,000 pounds. This particular ingot was made for the mid-ship main belt of the side armor of the battle ship "Connecticut." The taper of the plate was to be from 11 to 9 inches. The plate was to be face hardened and treated to the Krupp process. The train then proceeded through the steel foundry, and in machine shop No. 2 the party saw the finishing of the guns, tubes, bridge pins, and also the finishing of segments for the north tube of the Pennsylvania tunnel works, which was of especial interest in view of the fact that the party while in New York had inspected the work of constructing the tunnel, having been taken through the completed south tube. The heaviest work witnessed was the finishing of 12-inch breech loading coast defense guns. Another feature of interest was the machining of large hollow forged nickel steel crank shafts.

The cars were boarded again and they proceeded to the armor plate department. After inspecting the great hydraulic engines the cars came to a halt before the 50½-inch hydraulic press. Here the forging of a Krupp ingot into a plate for testing projectiles was seen. The size of the ingot was 20 x 102 inches, and its weight was 96,300 pounds. The great press, which exerted a pressure of about 14,000 tons, squeezed the huge ingot as though it were putty. The finished size of the plate was to be 8 inches thick, 6 feet wide and 12 feet long, and was to weigh 23,560 pounds. The train then passed the bending press, where the bending of gun shields for the United States Navy was done on a shield 4½ inches thick by 84¼ inches wide and 132 inches long. The weight of one of these sheets was 10,816 pounds. The party then proceeded on foot through No. 3 machine shop, where the finishing of armor plates was witnessed. The most interesting machinery in this building was the

rotary planer used for finishing the sides of the plates. This machine is capable of taking a 2½-inch cut off of a plate. The train was again placed at the disposal of the party, and after viewing the pig casting machine the members boarded their cars for Philadelphia.

#### In Philadelphia.

The Bethlehem party joined the section which proceeded direct to Philadelphia at the delightful quarters of the Germantown Cricket Club at Manheim. The Philadelphia Reception Committee announced that an informal supper would be served in the evening. This, in fact, turned out to be a delightful surprise, for it developed into an excellent dinner, which was enjoyed the more because of the absence of rigid formalities. The party which came direct to Philadelphia from New York, and which included the ladies, arrived at the club about 4.30 p.m., after a most interesting drive, and a tea was served immediately upon their arrival.

On Friday morning the various reception committees of the Philadelphia General Committee assembled at the Bellevue-Stratford Hotel, which served as headquarters, and the entire party was escorted to the Public Buildings, where the Mayor of Philadelphia, John Weaver, formally received the members and extended to them the freedom of the city. Sir James Kitson replied in a very happy mood in behalf of the Institute.

After this reception the members divided into various parties and, taking conveyances provided by the committee, proceeded in various directions to visit the several points of interest which they had selected.

One excursion was to museums, educational and scientific institutions, including the Franklin Institute, the American Philosophical Society, the Historical Society of Pennsylvania, the Drexel Institute, the University of Pennsylvania and the Philadelphia Commercial Museum and the Archaeological Museum. At one o'clock luncheon was served in the Houston Club of the University of Pennsylvania. An excursion which was very largely attended included visits to the shipyards of Wm. Cramp & Sons' Ship & Engine Building Company, the New York Shipbuilding Company, the United States Navy Yard at League Island and the Otto Hoffman Coke plant of the Public Service Corporation at Camden, N. J. The steamer left Chestnut street wharf at 10.30 a.m. and proceeded to the Cramp yard. Besides the machine and boiler shops, the principal feature of interest was the cruiser "Colorado," which has just been completed and which made a remarkably successful trial trip.

Luncheon was served on the boat en route to the League Island Navy Yard, the next stop. Here the visitors spent most of their time inspecting the naval vessels, several of which were stationed at the yard, including the battle ships "Alabama" and "Massachusetts," the cruiser "Denver" and the coast defense monitor "Florida." The next point visited was of particular interest inasmuch as it is a good sized shipbuilding plant started on a large scale and embodying throughout the most modern features of equipment. The yards of the New York Shipbuilding Company, at Camden, N. J., are referred to. This plant is on the Delaware River, opposite Philadelphia. Compressed air tools are used in all the departments; all light and power are supplied from a central power station; the normal working force is 6000. One of the most notable features of this plant is its method of handling material, 35 electric cranes of various descriptions being provided for that purpose. The plant is equipped with hydraulic machinery in the boiler departments and also throughout in the shipbuilding department, the punching of plates being done by hydraulic tools of novel operation, as well as the bending of the plates. The keel for the first vessel was laid late in the year 1900; since that time the company has launched 24 vessels, aggregating a tonnage of 77,504 tons. There are now under construction the cruiser "Washington," 502 feet long; the battle ship "Kansas," 450 feet long, and five light vessels for the United States Lighthouse Establishment.

The final stop was made at the great "by-product

plant" and coke ovens owned by the Camden Coke Company, which is controlled by the Public Service Corporation of New Jersey. This plant consists of two batteries of 50 ovens each of the Otto-Hoffman type, erected by the United Gas & Coke Company. The gas is used in Camden, and also pumped to Trenton, the capital of New Jersey, a distance of 38 miles, through 12-inch wrought iron pipe. The intermediate towns are supplied from the high pressure main through regulating governors. The daily production of coke is 350 tons, of which about 40 per cent. is marketed for metallurgical purposes, blast furnaces, cupolas, heating ovens, &c. The balance is crushed into sizes for domestic use. Other plants visited included the Baldwin Locomotive Works, the Bement-Miles plant of the Niles-Bement-Pond Company, William Sellers & Co., Incorporated; the Link-Belt Engineering Company, R. D. Wood & Co., the Pencoyd Iron Works, the Phoenix Iron Company, the Worth Brothers Company and the Southwark Foundry & Machine Company.

In the evening a reception was held in the Academy of Fine Arts. This was a brilliant affair.

The Philadelphia Executive Committee was composed of the following: William Sellers, Walter Wood, H. H. Campbell, James M. Dodge, Alfred J. Major, A. J. Moxham, Leonard Peckitt, John Birkinbine, Edwin S. Cramp, Stanley G. Flagg, Jr., Decourcy May, Frank C. Roberts, and W. R. Webster. Joseph Wharton was chairman of the General Reception Committee and Mrs. John Birkinbine was chairman of the Ladies' Committee.

#### At Washington.

On Saturday morning the party left for Washington. At Baltimore the train was met by F. W. Wood, president, and H. F. Martin, general superintendent, of the Maryland Steel Company, who had a special car in waiting and conducted about 20 of the members to the plant at Sparrows Point. A luncheon was provided at the works. The main party continued to Washington, arriving at 12.30 p.m. They were escorted in carriages to the headquarters at the Hotel Willard. Here a luncheon was served, and at 2.15 p.m. the members proceeded to the east entrance of the White House, where they were received by the President of the United States, Theodore Roosevelt. The President received the members in the "Blue Room" and spoke a few words of hearty welcome to the members of the council of the Institute. The entire White House was thrown open to the visitors, and a short time was spent in the inspection of the rooms and grounds.

During the afternoon the members took optional trips to points of interest. At 8.30 p.m. a reception was given the Institute in the Corcoran Gallery of Art, where the trustees of the gallery and the honorary committee of reception were met. This committee was one of the most influential ever gotten together in this country for a similar affair. It consisted of the several members of the Cabinet, eminent army and navy officers, heads of departments, &c. Wm. Barret Ridgely was chairman and Dr. David T. Day secretary. Through the efforts of the committee an extraordinary privilege was accorded to the visitors, the public buildings being opened for their inspection. At the Library of Congress the members were received by David Hutcheson, superintendent of the reading room. At the United States National Museum and Smithsonian Institution the guests were received by Mr. Rathbun, assistant secretary in charge of the museum.

Monday morning again saw the party moving westward, as the train left Washington for Pittsburgh at 8.30 o'clock. At Cumberland, Md., which was reached about noon, a stop was made for luncheon.

#### At Pittsburgh.

The first day's stop at Pittsburgh proved to be an extremely interesting one and opened the eyes of the visitors to one thing at least—the tremendous rate of production—the American pace. Early Tuesday morning the members assembled at the Hotel Schenley, where they boarded special trolley cars and were taken to the world famous Homestead works of the Carnegie Steel Company. The party was greeted at the entrance of the works with the Union Jack and the Star Spangled Ban-

ner waving a welcome. The 48-inch plate mill was the first department visited. Here the visitors were interested in the great strippers taking the ingot from the mold and the transfer cranes, or charging machines, which pulled the ingots out of the heating furnaces and deposited them upon the tables. The excellent operation of the great reversing engines and the ceaseless rapidity of all the operations of the mill were causes for exclamations of astonishment. And immediately upon entering the mill the visitors were struck with that feature which usually characterizes the first remarks of a foreign visitor to American steel plants: It is the few men to be seen at the plants and the almost weird movement of the fiery material from place to place with a continuous automatic rhythm that becomes most fascinating. From the plate mill, open hearth plant No. 2 was visited, and the party then passed through to the 32-inch slabbing mill. The great hydraulic shear chopping off slabs 4 inches thick and 38 inches wide and 45 inches long proved of special interest. The 140-inch plate mill was then visited, and the rolling of plates from  $\frac{1}{4}$  inch up in thickness and 136 inches wide, and running to a length of 600 inches, was witnessed. The extensive use of the "gooseneck" turning table at this mill was the occasion for considerable favorable comment. The party then wended its way to the beam mill, where the rapid rolling of the various structural shapes proved of immense interest. The traveling tables carrying the material from roll to roll and the moving cutting off saws pleased the visitors greatly, as did the straightening rolls at the end of the mill. At the armor plate plant, which was next visited, the English members of the party felt a special interest, for several of the monstrous machines constituting the equipment were of English make. The 10,500-ton hydraulic forging press, which was squeezing down a 75,000-ton ingot to a plate to be finished to 8 x 76 x 250 inches for the battle ship "Connecticut," it was noted, was built by Sir J. Whitworth & Co. of Manchester. This was not the largest press at the plant, however, for just in back of it stood one built by the Bethlehem Steel Company having a capacity of 12,500 tons per square inch. The special appliances for assisting the 160 and 100 ton Morgan electric traveling cranes in manipulating the huge ingots and plates were watched carefully. One of the interesting processes in finishing the plates was the cooling apparatus, which, after the treatment of the plate has been completed, sends hundreds of thin sprays of water all over the plate to assure its rapid cooling. Another interesting operation was the nicking of the scale from the plates, which was done by means of a small portable pneumatic tool.

After viewing the Homestead mills the party proceeded by special train to Duquesne, four miles distant, and while en route a luncheon given by the Carnegie Steel Company was served on the train. At Duquesne the party was at once taken to the 40-inch continuous bar mill. Here the very acme of rapid production seems to have been reached, and the hustle of the whole arrangement quickly excited the astonishment of the visitors. The flying shear down at the end of the mill was viewed with the greatest admiration, for this is distinctly new to most of the members of the party. The great power of the geared crank shear was commented upon and the easy manipulation of the ingots at the heating furnaces was also the subject of many remarks. The fascinating and beautiful sight of the big Bessemer converters was then beheld, and after walking through the Bessemer department the party walked to what they have dubbed the "Record Blast Furnaces." These are the four furnaces referred to in another article appearing elsewhere in this issue. Their achievement, which is of special interest, as it has just been made, they proudly proclaim by an immense sign placed at the top of one of the stacks bearing simply the figures 74,606. A production of this amount of pig by four furnaces in one month was easily voted by all as worthy of special compliments. The visitors inspected the furnaces carefully and then strolled through the blowing engine room to the admirable open hearth department, after which they again boarded the special train to return to their hotels.

In the evening a reception was given to the members of the Institute and their ladies by the Pittsburgh Reception Committee. This was a delightful function and a happy feature was the fact that the members were enabled to meet a large number of representative iron and steel manufacturers of the Pittsburgh district.

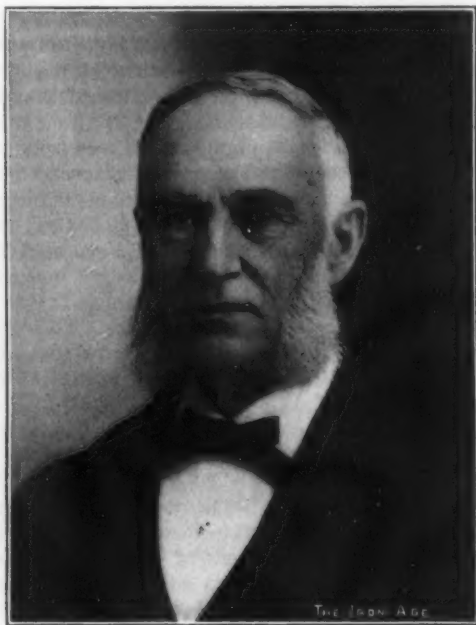


## OBITUARY.

WALLACE T. FOOTE.

Wallace T. Foote died October 19, 1904. He was born in Middlebury, Vt., March 18, 1825, and moved to Port Henry, N. Y., in 1847. From that time until his retirement from active business in 1885 he was conspicuously identified with the iron business. In later years he was successful in other lines, being interested in the pulp and paper industry, and also for years president of the First National Bank of Wyoming, Iowa. His home for 57 years was in Port Henry, where he maintained a wise and generous interest in everything that affected the welfare of the community. He was one of the promoters and directors of the first railroad that ran into the Upper Champlain Valley on the New York side.

Mr. Foote was one of the last of those pioneers of the iron industry in our country who helped in the laying of its foundation and aided its growth to the present enormous proportions. When he entered the business in 1850 the square stone stack, with its inefficient superimposed ovens, the blast driven through its open top by some nearby water power, producing from 6 to 10 tons



WALLACE T. FOOTE.

of pig iron per day, was but a feeble prophecy of our 500-ton modern furnace. In 1852 he took charge of the Port Henry Furnace Company, a corporation of Boston gentlemen, with B. T. Reed as president, whose property consisted of two stone stack furnaces, Nos. 1 and 2, located on the shores of Lake Champlain at Port Henry. In November, 1854, he inaugurated the modern furnace by blowing in the "new No. 2" at that place, which was described by a historian of about that time as follows:

This furnace was constructed on a new plan, having an outer case or shell of boiler iron riveted together and standing upon plates, supported by cast iron columns. This is the first erection of the kind built in the country, and so far as I am aware in the world, although some have been constructed in Europe with a boiler iron shell supported by brick arches. The furnace is 46 feet high, 16 feet diameter at the top of the boshes, 8 feet high at the top of the furnace, and is blown through five tuyeres by a vertical steam engine having a steam cylinder 30 inches in diameter, 6 feet stroke, and a wind cylinder 84 inches diameter, 6 feet stroke. In 1860 another furnace was commenced, but not completed until 1862. This furnace is propelled by machinery similar to the other, but somewhat enlarged in its proportions and power. The furnace built by Powell & Lansing was taken down in 1855, and that erected by Gray was demolished in 1865. During the last five years these furnaces have produced 58,100 tons of pig iron.

The English method of working a high furnace with a closed top has been recently adopted, and each of the furnaces has been raised 20 feet, giving them an elevation of 66 feet. One of them, after an operation of three months under this charge, shows a very satisfactory result by an increased production of

iron with a less consumption of coal per ton of iron made. The company obtains lime from a quarry upon its own property a short distance from the furnaces. Anthracite coal is exclusively used and is principally transported in return boats from Rondout.

The adoption of the "closed top" referred to in the foregoing extract marked the first introduction of that device in American iron making. At about the same time Mr. Foote introduced the "closed front" in this country, and applied the use of chemistry as an aid in burdening a furnace.

Mr. Foote's brother Charles H., former vice-president of the Illinois Steel Company, Chicago, and Mr. Foote's sons Fred. H., also a former vice-president of the Illinois Steel Company; George C., superintendent of the Zenith Furnace Company, Duluth, and Wallace T. of Witherbee, Sherman & Co., Incorporated, Port Henry, N. Y., all received their training under him. He was a man of strong character, showing the marks of his Puritan ancestry in his high sense of justice, his inflexible will and energy, his grasp of affairs and his broad Christianity, while the high position which he held in his home community speaks eloquently of the regard of those who knew him best.

### NOTES.

DAVID E. WHITON, founder and president of the D. E. Whiton Machine Company, New London, Conn., died September 11. The company has issued a tribute to his memory which is much superior to the usual form of such notices. Mr. Whiton was born in Stafford, Conn., October 15, 1825, was a farm and country school boy, a carpenter's apprentice, a pattern maker in the old George S. Lincoln Iron Works, Hartford, Conn., an evening student of drawing and mechanics at the Wadsworth Athenaeum in that city, a school teacher, a millwright and builder of old style and wooden water wheels, a designer and builder of iron turbine wheels, an inventor of centering machines, lathe and drill chucks and other mechanical appliances, which he began to manufacture in West Stafford, Conn., in 1856; served as town selectman and representative, and was an official member and Sunday school superintendent in the Methodist Episcopal Church. The tribute referred to says that "His example may well inspire those who come after him to equally faithful performance of life's varied duties."

THOMAS H. BEECHER, a well-known inventor, died at Hartford, Conn., October 28, aged 63 years. In his younger days he was employed at the United States Armory, Springfield, Mass., and later moved to Hartford, where an inventive genius, already developed at the Armory, led him to originate various useful articles, including sash locks and springs of many kinds. For years he was connected with the Mallory Wheeler Company, manufacturer of locks. Two years ago he organized the Beecher Draught Spring Company.

CORNELIUS M. SHIELDS, general manager of the Lake Superior Corporation, Sault Ste. Marie, Canada, died suddenly October 28 of heart failure, following a short illness from tonsillitis. He began his railroad career in La Crosse, Wis., in the early '70's as a telegraph operator for the old Southern Minnesota Railroad, now a part of the Chicago, Milwaukee & St. Paul. He rose to the position of superintendent. He was for some time manager of the Dominion Iron & Steel Company, and for about six months prior to its collapse was general manager of the Consolidated Lake Superior Company, to which the Lake Superior Corporation has succeeded.

DANIEL Y. SAXTAN, one of the leading citizens of Brooklyn, N. Y., died October 24, aged 80 years. He was born in Brooklyn and lived there all his life. In his early manhood Mr. Saxtan embarked in the manufacture of cast iron architectural work, as a member of the firm of Howell & Saxtan, which for 40 years conducted a foundry in Brooklyn and supplied the iron work for many of the largest buildings in that city and New York.

J. WYMAN JONES, president of the St. Joseph Lead Company, died October 23, in New York, aged 83 years. He was born in New England and graduated from Dartmouth College. In the '50's he went to Utica, N. Y., and engaged with George S. Dana in the wholesale agricultural



implement business. On the establishment of the St. Joseph Lead Company, in 1867, Mr. Jones became its president, holding the office up to the time of his death.

### The Canada Car Company's Plant.

The car manufacturing plant now being erected by the Canada Car Company, recently organized with a capital stock of \$3,000,000, is situated at St. Henri, near Montreal, Canada, between the Grand Trunk Railway and the Lachine Canal, and is in close proximity to the Canadian Pacific and the Intercolonial railways. The site covers 50 acres, of which there will be about 7 acres of buildings, so grouped that extensions to each and every department may be economically made in the future. The buildings, which will be of steel, with outside walls of concrete or brick, covered with gravel roofs, are arranged in two groups, with the power house, storehouse and office building separate from the main structures. One group consists of the machine shop, brass foundry, forge and smith shop, gray iron foundry and wheel foundry, while the second group embraces the planing mill, matching room, cabinet, pattern and carpenter shops, trimmers' and upholsterers', freight car erection, passenger car erection and wheel, axle, truck and bolster shops. Contiguous to this group will be the passenger and freight car paint shops. Ground has already been broken and foundations are well under way. The floor area of the various shops is as follows:

	Feet.
Machine shop.....	129 x 70
Brass foundry.....	86 x 70
Forge and smith shop.....	301 x 70
Gray iron foundry.....	215 x 70
Wheel foundry.....	215 x 184
Planing mill.....	387 x 70
Matching room.....	236 x 70
Cabinet, pattern shop and carpenters' department.....	236 x 70
Trimmers' and upholsterers' shop.....	172 x 70
Freight car erection shop.....	301 x 70
Passenger car erection shop.....	301 x 70
Wheel and axle and truck and bolster shops.....	301 x 70
Passenger car paint shop.....	301 x 70
Freight car paint shop.....	322 x 70
Store house.....	120 x 80

Most of the shops will be served by electric overhead cranes, and tracks will be laid throughout such shops as require them, and throughout the yard, so as to entail the minimum amount of movement. Electric power will be used wherever practicable, many of the machines being driven by separate motors. Large machines will be driven by separate steam engines, while the smaller machines in groups will be driven from shafting. Compressed air will be piped throughout the plant to operate riveters, reamers, rivet furnaces, &c.

The plant, which will be entirely self contained, will manufacture everything from the raw material, lumber and steel. The initial capacity of the shops will be about ten passenger cars per month and 20 freight cars per day, with their corresponding trucks. While wooden cars will be the first product, provision is being made by the company to manufacture composite, wood and steel, and all steel cars, pressed steel or structural shapes, street cars and special types of trucks and bolsters, and other specialties used in car building. The methods of manufacture of the Pressed Steel Car Company will be closely followed, and its patents will be used by the Canada Car Company.

The situation of the plant on railroads and canal will enable shipments to be made and received with great facility, and especially will the plant be able to take care of foreign work, as vessels can load up at the Car Company's docks and deliver to foreign ports without breaking bulk.

The president and general manager of the company, W. P. Coleman, has offices at 529 Board of Trade Building, Montreal. He is assisted by N. S. Reeder.

The new rifle for the United States army is said to be highly efficient. Twenty-three aimed shots have been fired in one minute when used as a single loader, and 25 in a minute with the magazine. With an ordinary service charge the powder pressure in the rifle chamber is about 49,000 pounds per square inch, and the maximum

effective fighting range is 4800 yards, or nearly 3 miles. The penetrating powers of the new rifle were illustrated in a test some time ago. With a regular service charge the steel bullet, at a distance of 50 feet from the target, was driven 54½ inches into white pine butts, and also showed its ability to penetrate a steel plate nearly ½ inch in thickness. The caliber of the rifle is 0.30 inch, as with the present Krag Jorgensen, and the weight of the gun is 8 pounds.

### The New York Subway Opened

New York's Subway, the largest tunnel in the world, was thrown open to the public from the City Hall to 145th street on October 27, and for the first time in their lives the citizens to the number of 150,000 reversed their steps and traveled underground. Mayor McClellan, handling a silver controller, started the first regular train in the afternoon at 2.34 o'clock, but it was not until 7 o'clock in the evening that the public was admitted. From that hour until midnight the road carried 125,000 people, an average of 25,000 per hour. It is the intention to put on extra trains each day, and if it becomes necessary the management can double the equipment and handle 50,000 passengers hourly. In the operation of the system every detail has been worked out to perfection, and the smoothness with which the cars run, the ease with which they are started and stopped and the quickness with which they are gotten under full headway have called forth much favorable comment.

In building the Subway innumerable difficulties were overcome; a river was tunneled and ground was cut away from beneath the elevated road without interfering with its operation. The work has involved an investment of \$75,000,000, of which \$35,000,000 represents the bare cost of construction. In all, 3,212,000 cubic yards of material have been excavated, of which 1,312,000 were of solid rock. In construction 65,000 tons of steel and 8000 tons of cast iron were used, and 550,000 square yards of concrete and nearly 1,000,000 square yards of water proofing have been laid. Some interesting facts about the West Side branch, just opened, and the entire system are presented in the following table of statistics:

Length of Manhattan-Bronx system.....	22 4-5 miles.
Time taken to complete West Side branch.....	4 yrs. 7 months 3 days.
Approximate number of men employed to build whole system.....	12,000
Men employed to operate the West Side branch.....	2,300
Cars in operation on day of opening West Side branch.....	300
Stations on entire system.....	49
Stations opened October 27, 1904.....	28
Average height of tunnel from base of rail to roof.....	15 feet.
Greatest depth below surface—at Fort George.....	150 feet.
Seating capacity of each subway car.....	52 persons.

The New York Subway is far ahead of the London tunnels and Paris subways, being much more extensive, better ventilated and more modernly equipped in every respect. From the figures above it will be seen that the entire system when completed will be 22 4-5 miles in length, while the Metropolitan Underground, London, is 13 miles long; Simplon, Switzerland, 12 miles; St. Gothard, Switzerland, 9¼ miles; Paris underground, 8½ miles; Mont Cenis, Switzerland, 7½ miles; Baltimore, Baltimore & Ohio, 7 miles; Arlborg, Austria, 6 miles; "Tuppenny Tube," London, 5¾ miles; Hoosac, Massachusetts, 4¾ miles; Berlin underground, 4½ miles; Liverpool and Birkenhead, 4½ miles; Boston subway, 2½ miles.

The Interborough Company announces that it will open the East Side branch as far as the Harlem River this week, and that the rest of the Manhattan-Bronx system will be ready in the spring.

Light and power for agricultural and manufacturing purposes are supplied in the village of Askov, Denmark, by taking advantage of the remarkably uniform winds there prevailing. A special device is provided for controlling the speed of the dynamo, and there is sufficient storage to tide over periods of calm not exceeding four or five days in duration. A gasoline engine is installed as a reserve, but the wind mill is so reliable a factor that the engine is used on the average only about one day in two weeks.

# The Iron Age

New York, Thursday, November 3, 1904.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	-	-	-	EDITOR.
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RICHARD R. WILLIAMS,	-	-	-	-	-	-	-	-	HARDWARE EDITOR.

## A Striking Analogy.

Commercially, the events of the past 18 months vividly recall the experience through which this country passed in 1884-1885. For the benefit of those whose business career falls short of that somewhat distant period, or who have forgotten its precise conditions, it may be well to make a brief reference to what then occurred. Following the great depression of 1873-1878, the country enjoyed an era of redundant prosperity from 1879 to 1883, which led to speculative excesses, principally in railroad building and the consolidation of railroad systems. New securities were brought out in increasing volume until finally the strain on our financial resources was too great, and on May 14, 1884, several failures were precipitated of New York banks and banking houses who had overreached themselves by financing such schemes. The country was then on the verge of a panic from which it was saved by the action of strong banking interests, who took immediate steps to check the apprehensions of the public. But despite their utmost efforts no less than 37 railroads, embracing 11,000 miles, or nearly one-tenth of the railroad mileage of the country, were taken in charge by receivers during the year. Business was almost paralyzed for a time, as capital withdrew its support from fresh enterprises, conservatism governed all mercantile transactions, orders for merchandise were canceled, wages generally were reduced and manufacturers were obliged to run on part time or suspend operations completely. This state of affairs continued until the autumn of 1885, when business revived under the stimulus of good crops. By that time the country had recovered from the ill effects of the speculative strain of 1882-1884, and the fact had been convincingly demonstrated that the nation's finances as a whole were on a sound basis, only a few speculative interests having been crippled. Once started in the proper direction, it was surprising how quickly the work of rebuilding the country's business activities expanded. Confidence was fully restored. Suspended undertakings took a fresh lease of life, new ventures were launched, merchants no longer hesitated about laying in stocks of goods, orders again filled the books of manufacturers and the year 1885, which had opened with depression and uncertainty, closed with activity and cheerfulness.

The analogy which that period presents to the recent past is most striking. Following the depression of 1893-1898, we have seen the country enjoy several years of even greater prosperity than in 1879 to 1883, accompanied by much worse speculative excesses, yielding a huge crop of securities far beyond the nation's capacity to digest, resulting in a sudden suspension of commercial activity in the spring of 1903. While no important failures of banks occurred, the process of liquidation caused declines in values almost as violent as if a panic had actually been precipitated. The winter of 1903-1904 saw a condition of business paralysis precisely similar to that of the winter of 1884-1885. But now, as then, demonstration has been made that the country, as a whole, is in sound condition and that the furious speculation has only

worked injury in spots. With good crops now, as in 1885, all branches of business have begun to recover from their depression, and again we see a restoration of confidence.

Thus far the analogy is perfect. Whether it will be completed remains for the future to disclose. Recurring to the history of the period ushered in with the recovery of business in the autumn of 1885, we find that the revival brought with it some advance in prices, as was to have been expected, but it was by no means rapid. For a year the demand for iron and steel was steadily heavy, but not extravagantly so. In 1886, however, railroad building became surprisingly active, in view of the disasters which had overtaken many such ventures in 1884, and no less than 8018 miles of new track were built, greatly augmenting the demand for rails and advancing the price of both rails and pig iron. In 1887 railroad building was still more active, the new track laid that year running up to 12,898 miles, making it the greatest year ever known in American history for railroad extension. Steel rails at this time sold up to \$39.50 at Eastern mills, declining gradually with the diminution in railroad building until \$27 was reached in 1889. Between 1885 and 1890, however, the demand for iron and steel was at no time actually dull. In fact, the condition of the iron trade for that period might be termed exceptionally healthy, as the demand usually furnished quite full employment to furnaces and mills and prices were remunerative. The output of iron and steel increased steadily. Taking pig iron as the basis, the annual production grew year by year from 1885, showing no recession in any year up to the close of 1890. It was at this time that iron and steel manufacturers greatly improved their processes and so universally introduced labor-saving appliances, which were destined to play such an important part in reducing costs and enabling American products to be so freely exported when the depression of 1893-1897 restricted the home consumption. The analogy of 1885 will not be complete if we do not now have several years of sustained demand and steady prices. Students of price cycles predict such a period, and so far as fundamental conditions are concerned everything is favorable to such a forecast.

## An Eight-Hour or a Six-Hour Day.

The working day has been abridged because it has been gradually demonstrated that labor is not efficient when exhausted; the shortening of the day has been consistent with increased production. In certain cases it has been demonstrated that the eight-hour day is economical. This may be true of others, but it depends upon trial. There was published in *The Iron Age* last year the account of the successful working of the eight-hour day for several years in a large machine shop in England. The proprietor of a machine shop in Philadelphia has described the success that attended the experimental reduction of the working day in his shop from ten to nine and a half and then to nine hours. So far as the reduction of the working day is found to be consistent with economical production it will be continued; but the fact that in many instances where the eight-hour day has been established the men have sought outside work for their spare hours, or have been eager to work overtime for extra pay, does not support the proposition that eight hours is as long as men generally can work efficiently.

But the eight-hour day is not urged by labor unionists because it increases production, but because it re-



duces it. The labor union view is presented by Tom Mann in an article in the *Nineteenth Century* on labor conditions in Australia. He says:

It is only in recent years that the demand for reduced working hours has been put forward as a sound economic method of absorbing the unemployed, dislodged from their occupations by the march of invention, and also as a means to enable the worker to share more equitably in the ever increasing product of labor. Having regard to the greatly increased productivity of labor, the West Australian labor party is now vigorously advocating a seven-hour work day, and when one speaker at the Victorian eight-hour celebration claimed that there were stronger reasons to be advanced in favor of a six-hour day than there were in 1856 in favor of an eight-hour day, the statement was received with vociferous applause.

We may pause a moment to notice that, in spite of the dominance of labor interests in Australian politics, Mr. Mann is at some pains to show that Australia is far from being a workingman's paradise. In Melbourne the "unemployed assemble several days during each week and hold meetings in the usual style calling upon the authorities to provide means for work." In several trades 15 per cent. of the men are unemployed. "The Amalgamated Engineers at the present time have 18 per cent. of their members in Victoria in receipt of society benefits; New South Wales being quite as bad. Nor is gold mining in Victoria any better."

To return to the so-called economic argument of Mr. Mann for the short day, it is interesting to learn from a part of the world where the labor unions are especially powerful that the success of the eight-hour movement will be followed by one for a seven or a six, and why not a four-hour day? The purpose is "to absorb the unemployed, dislodged from their occupations by the march of invention." What we have witnessed in this country is that as the march of invention reduces the cost of production, selling prices decline, consumption increases and the labor dislodged is employed in new industries, or in the extension of the old. Mr. Mann's proposition is to defeat the march of invention and paralyze industrial progress, for invention will cease if all the labor dispensed with by introducing a machine is to be re-employed by reducing the time that each man shall work. Under his plan the cost of production, the labor cost per unit of product, is not to be decreased, prices cannot be reduced, consumption cannot increase, and there can be little increase in the demand for labor.

Mr. Mann complains that labor is more "exploited" in the United States than anywhere else. The labor unions certainly have less power here than in England or Australia, but wages are very much better than in either, and employment is much more general here than in Australia, according to such information as he gives. Here there is comparatively little restriction upon the process of economizing labor, and the working day is, generally speaking, longer than in England or Australia. Nowhere else is there so rapid a dislodging of workmen from their employments by the march of invention, and nowhere else is the dislodged labor so readily reabsorbed. The policy of increasing production and reducing the labor cost has been justified by its results to the wage earners quite as much as by its results to other classes of the community.

Mr. Gompers, whose political economy is very much like Mr. Mann's, has repeatedly urged that a slack market for products be met, not by wage reduction, but by curtailing the working day, of course without curtailing the pay. To reduce the output is a common means of meeting a slack demand, but the manufacturer discharges a part of his force or puts all on reduced time, and, of course, reduced pay. Mr. Gompers' plan would maintain the amount of wages paid intact, while reducing the

amount of product the manufacturer would have to sell, and it may be questioned whether the most philanthropic employer could maintain this process long. The political economy of Messrs. Gompers and Mann stops short of explaining how an employer can continue paying an unreduced amount of money to his work people while getting a diminished sum from his customers, or how the latter can be forced to pay customary prices for commodities with their own earnings or profits impaired by adverse conditions. The disposition and the ability of the latter to buy are essential elements of the problem which these gentlemen ignore.

Until not more than 50 years ago manufacturing operations, in a small way, were carried on in almost every community in little shops and even in the home. The factory system, which developed later, had not then overthrown the "cottage system" of manufacture that had existed for centuries in England and on the Continent. Small industries, in which the individual wrought at his bench or lathe or loom, assisted, perhaps, by members of his family, also prospered in this country until capitalists were able to divert to themselves business which had theretofore been divided among hundreds of smaller producers. This centralizing influence, stimulated by the invention of labor-saving machinery, gained ground with every year and led to the combinations, consolidations and great corporations which have been so familiar a figure and so potent an influence in the past ten years. Gradually the small proprietor was compelled to abandon his shop and take a more humble position in a big mill, and nothing played as great a part in forcing his surrender as the relatively high cost of power in small units compared with the economy of large plants with their transmission systems. But a new force is at work which is resulting in the reopening of small manufacturing enterprises. This influence is the small electric motor with its comparatively low cost of operation when furnished with current from central power stations, especially where this is the surplus power of large electric lighting or electric railway plants. In communities where this service is not obtainable, the gas engine, and particularly the gasoline engine, is solving the power problem for the little shop.

The steam turbine is proving adaptable to other important fields than the general one of power for stationary plants and steamships. By virtue of its compact and simple construction, it may be used for special purposes, where a reciprocating engine could not be used, or, at any rate, would be less desirable. Realizing this, the designers and manufacturers of turbine engines have expended much thought and money in developing turbines of low power, especially for use direct connected to electric generators. An instance of the demand for this adaptation of the turbine is in the electric lighting of railroad trains. The turbo generator may be located in a baggage car, but a better practice is to place it on the locomotive, either on the buffer beam or on top of the boiler, where it can have the attention of the engineer. The experience gained by providing for just such special conditions has brought about the design of a small unit turbine which is an efficient engine, just as its larger type has been developed until it is a very important factor in the world of steam engineering. The field for small turbines is by no means as limited as may at first appear, for there are many purposes where it is very economical and altogether desirable.



## CORRESPONDENCE.

**The Development of the Steel Foundry.**

To the Editor: In the issue of *The Iron Age* for October 13 appeared an editorial relating to steel foundries which is so manifestly founded on erroneous information that I venture to call your attention to it. The motive of the article in question was doubtless a worthy one, being to draw attention to the prosperity believed to exist in the steel casting trade and the bright prospects due to the prevailing tendency of engineers to substitute steel for iron castings.

Unfortunately, prosperity does not now exist in the steel casting trade, and the past year has not been one to which the steel foundries in general can point with pride, or even with complacency. The report recently published by the principal steel casting company of the United States showed a falling off of nearly 50 per cent. in business done, and there is probably not a single steel foundry in this country that is turning out more than one-half the tonnage that it has the capacity to make. Not a few of the steel casting plants are closed indefinitely for lack of work to do. Some are in receivers' hands, and the promoters of at least one new plant in course of erection in the East have been compelled to abandon their project because the outlook is too poor to admit of the needed funds being raised to complete it.

The comparatively small volume of business offering has resulted in very keen competition, and prices have fallen lower than was ever before known in the trade, while the cost of production, aside from the cost of materials used, has increased because of the diminished tonnage.

My object in writing you is to say that your article, founded, as it is, on inaccurate information, may do much harm because of the credence given to your reports. Some investors, not having the opportunity personally to investigate the matter, may be influenced by your article to invest in a steel foundry project, to the injury of themselves and those now engaged in that business, who would suffer by reason of excessive competition. No one can reasonably object to others entering the same field of business activity as himself, provided they do so legitimately and with a full knowledge of the conditions prevailing. It is the incautious and misguided investor entering upon the field on the strength of some other individual's opinion, and with all the blissful confidence due to ignorance, who creates unhealthy competition, which generally ends in disaster to himself and injury to others.

Those who are in a position to be well informed believe that the steel foundries now existing are more than ample to care for all the business that is likely to exist for some years to come.

W. A. HERRON,

President Duquesne Steel Foundry Company.  
PITTSBURGH, PA., October 25, 1904.

**The Carnegie Steel Tie.**—The Carnegie Steel Company, Pittsburgh, is now turning out steel ties on a commercial basis at the Homestead Steel Works. These ties are designed to supplant the ordinary wooden ties, and while the initial cost is somewhat higher than that of the wooden tie, this is more than offset by the longer life of the steel tie. These steel ties weigh 19½ pounds each, are 4½ inches wide on the top, and 7½ inches wide on the bottom, while the web is from 5-16 to ¾ inch thick. The company has recently furnished 7000 of these ties to the Lake Shore and 5000 to the New York Central roads.

In one day last week the Bessemer steel plant of the Republic Iron & Steel Company, Youngstown, Ohio, turned out 1747 gross tons of 4 x 4 inch billets. This is its best record for one day, but it is expected to get this plant up eventually to 2000 tons per day.

On page 25 of last week's issue of *The Iron Age* mention was made of a chain made by Bradlee & Co. of Philadelphia, weighing 132,940 pounds. By a misprint it was said to be a 2½-inch chain, but should have been given as 2%. We mention this so as to be strictly accurate.

**A Pioneer Iron Manufacturer's Diary.**

In these busy days men have no time to keep the elaborate "journals" and diaries of their grandfathers. A long distance telephone talk or a message by wire is the proper thing. This reflection is induced by a quaint old diary which has just been given to James A. Green, of Matthew Addy & Co., Cincinnati, by C. C. Boyden, a grandson of Otis Cary of Foxboro, Mass. Mr. Cary's diary, which is given below, tells of a trip through the Southern States in search of cinder beds. He was a typical New Englander, was small of stature, alert of action, most genial and companionable. He took a deep interest in everything of public nature. He was of irreproachable character. For a score of years he was on the board of selectmen of Foxboro. For many years he was president of the Foxboro Savings Bank and also president of the National Bank of Wrentham. He was twice a member of the State House of Representatives and twice a member of the State Senate. He was one of the original Free Soil party, and undoubtedly his observations on the trip referred to were very keen in matters and incidents bearing on the subject of slavery. The following article relative to the Foxboro foundry was published in a local paper after the destruction of the works by fire in 1897:

The Foxboro foundry came into existence in 1781, and the plant was first owned by Uriah Atherton, George Stratton, John Knapp and Joseph Hewes. We cannot say that it was erected for the express purpose of casting cannon and cannon balls, but history tells us that it was first used for this purpose, and the Continental Army was the gainer thereby. It is said that when the first casting was made a goodly number of spectators was present, composed mostly of neighbors. After the Revolutionary War ended the making of iron pots and kettles was substituted for the munitions of war, and these were peddled about this town and others in the vicinity. A few years after the war a man by the name of Beriah Mann purchased the foundry and carried the business on until the year 1812, when it became the property of General Shepard Leach of Easton. He sold the plant 22 years later to Otis Cary and Martin Torrey, the sale taking place in 1834. In 1839 Mr. Cary bought out Mr. Torrey's interest, and he it was who discovered the process of extracting the waste ore (which was found in Foxboro, and which was mixed with nearly one-eighth of ore from New Jersey) from the cinders accumulated during many years previous.

"In the year 1855 there were as many as 25 men employed, and during that year 350 tons of the products were turned out. Twelve years later the old foundry building was burned, this being in 1867. It was immediately rebuilt—the following year, we believe—and for the next two or three years the business was carried on by Lewis and J. F. Daniels, the latter afterward conducting the business alone. The incorporation of the Foxboro Foundry & Machine Company took place about 10 years since, and up to the time of the last fire had been doing a splendid business."

The diary above referred to is as follows:

January 28, 1837. Set out for New York. Took the cars at Attleboro quarter before twelve, and arrived in Providence at one o'clock; left in the boat "Benjamin Franklin" quarter past one. Considerable ice for 5 or 6 miles. Reached Newport quarter past four.

January 29, Sunday morning. Ice near Frog's Point 4 to 6 inches thick. Obligated to back five times before we could get through. Arrived at New York at half-past ten, and stopped at the Astor House and took Room No. 146. Attended the Episcopal Church in the forenoon in Broadway and a church in Wall Street in the afternoon. In the evening attended the Brick Church in Beekman street. Heard a man from Charlestown, S. C., on the importance of instructing and evangelizing the Africans. Stated that he had 500 colored members of his society, and that some of them had gone to Africa as missionaries, and that missionaries had also gone from that region from the whites; he also said that the North was as much implicated in the sin of slavery as the South, and that it ought to bear the expense of educating and liberating the Africans as well as the South. He was asking aid for the Female Society of New York for educating the blacks. Saw in a Bangor paper the death of

Thomas W. Collamore on the 22d inst. Wrote a letter to Brother Austin.

January 30. A wet thawey day. Have been looking for pig iron. Messrs. Caswell & Murdock have 30 tons Calder, which they offer at \$65 cash, or \$70, four months. No American in market, and but very little Scotch, and what there it is held at the above prices. Find good living and attentive servants at the Astor House, but will not do for me, it takes too much time and is not in good time. Dinner at half-past three, which takes over one hour to eat, tea at 6 and meat supper at 9 o'clock. The dinners were excellent, especially the charlotte russe, spoken of by Hallett. Bill at Astor \$4.

January 31. Left New York at 7 o'clock in the morning in the steamboat "Independence" for Philadelphia. Fare \$3.50, including breakfast at half-past nine. Took the cars at Amboy. The cars are with three apartments and coarse affairs compared with those in the Providence road; no stoves in them. The land for the first 10 miles to Spotswoods, the next 10 to Hightstown and next 14 to Bordentown very poor and sandy, pitch pine and swamps, the houses small and poor and the barns worse, which was the case for the most part to Camden. The seat of Joseph Bounaparte, near Bordentown, is spacious, but does not compare with some of the seats near Boston, for elegance at least, so far as we could judge from passing it. Burlington is quite a pretty village, about 17 miles from Camden. The land appears better from Bordentown to Camden than between Amboy and Bordentown, some large heavy timber and many fine peach orchards; the wood mostly oak, walnut, chestnut and pitch pine, no stone any part of the way, what fence there is being wood. There is scarcely any underbrush in the woods, except in the swamps. Arrived at Camden at 12.30 o'clock. I took the boat for Philadelphia, arrived here at 1.30 o'clock, lodgings at the United States Hotel. Called on Wallace, Chandler & Co., found them very fine obliging men. Called on Mr. Jewett, one of the owners of the Octorara Iron Works, near Elkton. He thinks I may find plenty of cinder heaps, which will cost but a trifle. He thinks that the forge cinder will be much the best. Philadelphia is by far the neatest city I ever saw, and being laid out in regular squares, a stranger can easily find his way to any part of it. Many of the buildings are elegant, being of white marble. The city clock is illuminated in the evening, which gives it a splendid appearance. In the evening attended the exhibition of the burning of Moscow, which is a splendid affair. Warm, thawing weather. The United States Hotel is a good house with plenty of good, obliging black waiters; with one exception. The waiters at the Astor House are all white that I saw, except one.

February 1. Called on Fales & Lathrop, and they informed me that Mr. Wright's furnace was at Millsboro, Del., some distance from Lewistown, and they were not carrying on any business except getting out cinder iron. I have concluded by advice of Wallace, Chandler & Co. and Mr. Jewett to go to Elkton and up the Susquehanna. Have this morning taken a seat to start at 4 o'clock, fare \$6 to Elkton. Bill at United States Hotel \$3.75. Weather continues warm. Does not freeze any this evening. Wallace, Chandler & Co. have given me letters of introduction to Messrs. Whitakers, Elkton, Md.; Perdue & Co., Octorara Works, Maryland; Franklin Wright & Co., Victoria Iron Works, Dauphin County, Pa.; George M. Keim, Reading, Pa. Have not seen but one man since leaving New York that I knew, and that is B. V. French, who arrived here this evening.

February 2. Set out from Philadelphia at 4 o'clock for Elkton, Md., through a part of Delaware. The country very poor, for the most part the houses small and very poor, being built mostly of stone or logs, except in the villages where they are mostly brick or stone; considerable heavy wood and timber, principally white oak, black oak and walnut. Stopped at Wilmington, which is a very pretty flourishing village, where I. Bonney carries on a foundry. Arrived at Elkton at 12.30 o'clock. Rode from Philadelphia with the Secretary of State of Texas, who accompanied Santa Anna to Washington. He was a good companion, and we two were all that were in the coach. The roads were bad from Wilmington; no bridges in many places and the roads badly gullied. Saw near Wilmington a piece of stone wall and a yoke of oxen, which were the first I had seen of either since I left Rhode Island. After dinner I hired a horse and started horseback for Elk Iron Works, owned by Whitaker, Garrett & Co., where they make boiler iron and some nails, 5 miles, for which they charged me \$1 from Elkton village. Found Mr. Whitaker a very fine man, who gave me considerable information about furnaces in different directions. He rode down to the village with me, and gave me a line to E. Whitaker & Co., Principio. The roads were almost impassable. Had to ford several creeks with the water nearly to the horse's belly. The houses were mostly wood and made of logs. The houses in all this part of the country have window shutters to all the lower windows. There is scarcely a schoolhouse or a meeting house to be seen. The horses are not so good as in Pennsylvania, where they have the best teams I ever saw, but they are very poor

here and the work is all done by horses. See but very few slaves in this vicinity.

February 3. Hired a man to carry me to Sicilly Furnace at Principio, 12 miles; gave him \$3. Stopped at Northeast, where the Whitakers have a forge for making blooms. There is an old furnace nearby, but no cinder of any amount, as it never made but one blast. At the Sicilly Furnace there is a large heap of cinder. The furnace was burnt by the British during the last war. They formerly made cannon. The cannon on board the "Constitution" was made there. It is on the Chesapeake Bay. The railroad passes between the furnace and bay. Say they have been offered \$4000 for the cinder heap, and if they do not sell it shall put up mills to get it out themselves. Calculate to put up a rolling mill to have ready to start in one or two years, and then they will want all the water. Are making pig iron. Say they have been offered \$46 per ton at the furnace for forge pig and \$50 for furnace pig. The iron in the cinder heap is hard, as is the iron which they have made. Took stage for Baltimore at 4 o'clock, and arrived in Baltimore at 11 o'clock. Fare, \$5. Stopped at Barnum City Hotel. The roads from Elkton are the worst I ever saw; no bridges over the creeks, and the houses and other buildings in the same way. Crossed the Susquehanna on the ice afoot. At Havre de Grace passed some corn and wheat fields, from 30 to 70 acres in each.

February 4. Called on Pratt & Keith, and made some inquiries respecting furnaces. They directed me to the Messrs. Ellicotts. Called on I. Ellicott & Brothers, owners of the Elkridge Furnace, 6 miles from Baltimore. They say they have a cinder mill which cost \$3000, and intend to work all the cinder they have. Called on Mr. Parker, owner of the Crutis Creek foundry. He says he has commenced putting up a cinder mill, and intends to work all his cinder. Asks \$50 per ton for pig. Pratt & Keith say there has been nothing done with the cinder at the Antietam Iron Works, 10 miles from Harper's Ferry. Cost \$4 per ton to get it to Baltimore. Also the Catocin Furnace, 16 miles from Frederick City. Cost \$8 per ton to get it to Baltimore. Called on A. P. Bickner. Saw Samuel Bickner, who is the second person I have seen since leaving New York that I ever saw before. Baltimore is quite a pretty place, but not equal to Philadelphia. Went into the market in the evening and found a motley crowd, black and white, bond and free, women in abundance, both black and white, selling meat, meal, fish, potatoes, apples, rabbits, butter, lard and almost everything else that can be named, and women and girls of every description buying. The negro women almost all of them wear a handkerchief on the head. Bread is all hand baked here.

February 5. Took the stage at 4 o'clock for Kingsville. I arrived there at 7 o'clock, and then went across the fields to Franklinfield Baltimore foundry. Found Wm. H. Terrey. Took breakfast, and then went to Rigeley's Forge & Rolling Mill on the Big Gunpowder. Very extensive works, but not in operation. Next went to Patterson's Forge & Nail Works, where they make nails from puddled iron. Their pig is made at Bush Furnace, and is very hard. Returned to Franklinville, took dinner and attended Methodist meeting at 3 o'clock, and then started and went to the Philadelphia road and took the stage and arrived in Baltimore at 11 o'clock, much fatigued with the ride and walk, having ridden about 30 miles and walked about 20 miles. Franklinville is a fine establishment, and the people seem more civilized than in many other places. The farms are very poor as well as the buildings in this part of the country. The houses are a large part of them built in the fields and woods without any roads by them. The weather continues moderate, and the roads are getting very muddy. Wm. Terrey agrees to meet me Tuesday morning, and go with me to Elk Ridge and some other furnaces and then to Washington.

February 6. Called on Lewis M. Hewes, who sells pig iron. Has some for which he asks \$50 per ton and some \$38. Has this day received an order from L. Drake for 25 tons. The iron is made at the Mont Alto Iron Works, near Chambersburg, Franklin City, Pa.; Fayetteville, the nearest stage route, 20 miles above Gettysburg. Says that they have a cinder mill, but does not think the iron worth much 20 miles from water carriage, but expects the railroad will run within 3 or 4 miles. Mr. Oliver and N. Parker have a lot of about 30 tons old plate, refuse pipe, &c., which he offered Saturday for \$35, but to-day will not sell it for less than \$40. He asks \$55 for pig iron. People all through where I have been are almost crazy about iron. They seem to think it will bring almost anything they choose to ask. I expect to start for Washington to-morrow morning. The weather is warm. At tea this evening had the windows open each side of the hall.

February 7. Started for Washington on the railroad with W. H. Terrey. The cars on the road have eight wheels. They use hard coal in the engines. The road is very good, but the whole country through which it passes is miserably poor, and even about the city. The Capitol is a noble building; everything about it is on a large scale. Went into the House, where they were attempting to pass a vote of censure on Mr. Adams. The Senate was discussing the Land bill. Saw all the prominent men, and heard short speeches



from a few of them. Saw the President's house, but it was not so magnificent in appearance as I expected to see it. The streets are very wide, but not much business doing, except on the public works. Put up at Gadsby's, a fine house and full of guests. Bill for supper, breakfast and lodging \$1.50.

February 8. Returned to Baltimore; took a seat in the stage for Gettysburg. Fare, \$3.50. Saw Mr. Creary, who has been for several years engaged in the iron business; is now with Mr. Hewes. Says he has sold iron to Drake, and has purchased stock for C. & R. Thinks he might buy cinder heaps to good advantage, as he is acquainted at all the foundries. Was introduced to Mathew Hewes, agent of Mont Alto Works. He gave me an invitation to visit his place. We have a snowstorm this evening.

February 9. Took stage for Gettysburg at 7 o'clock, and arrived at 6 in the evening; 52 miles through a miserably poor country, the snow from 2 to 6 inches deep. The houses mostly log with ovens built some rods from the house; the barns many of them built of logs, the roofs covered with straw, the gable ends open. The taverns are very poor. Only two of us in the stage, one from Ohio. Passed hundreds of wagons on the way to and from Baltimore.

February 10. Called on Mr. Stephens, proprietor of the Maria Furnace, and member of the Legislature, may be found at Wilson's Hotel, Harrisburg, is in want of a good man to oversee and manage his works. Says that the furnace has been in operation but a few years, and the cinder has been carted into the road and hollows. Called on Miller & Cooper, owners of Cumberland Furnace. Say they will sell their furnace cinder, but are now carting it away to build a dam. At 10 o'clock started from McLellan's in Gettysburg, horseback to Pine Grove Furnace, 17 miles, Peter Ege, owner. Roads very bad over mountains and but few inhabitants; no houses for miles together. A very fine establishment, make mostly pig, and melt it over for forge. Have carted their cinder into roads and holes, so that it would be no object to collect it. The workmen say that at Mount Pleasant, 5 miles above Loudon street from Chambersburg, is an old furnace and the largest cinder heap in the United States. Juniata Furnace, Perry County, 3 miles from Bloomfield and 20 miles from Carlisle, has a large cinder heap. From Pine Grove I went to Cumberland Furnace, 6 miles. Make mostly pig; cinder mostly in a heap, but are carting it to build a dam with. Cinder mostly clear, as is the case with most pig furnaces that I have seen. Went from Cumberland to Mount Holly Iron Works, George Ege, owner, 7 miles from Cumberland. He wishes to rent it. It has furnace, forge, four fires, coal house for forge, smith shop, counting house, good warehouse and stable, two or three good dwelling houses, 20 or 30 tenements, mostly poor, 8000 acres of wood, none of it more than 6 miles from the works. Ore in abundance 2 miles from the furnace, a good road, set stove and hollow ware patterns and flasks. The building and dams want some repairs. Will rent the whole for \$7500 per annum for five years, payable quarterly. Will cost \$8 per ton to cart to Baltimore. Can hire good help for \$13 or \$14 per month and board themselves, and wood cut for 33 cents per cord. Went to Carlisle, 7 miles, arrived at 8 o'clock, put up at George Beetem's inn. Very much fatigued, having ridden 37 miles without tasting anything since breakfast in Gettysburg.

February 11. Saw one of the owners of Oak Grove Furnace, Perry County, 10 miles from Carlisle, over the mountains. Said that I should have to walk 2 miles up and 2 miles down on account of being so steep. Have been in operation for ten years. Cinder mostly in a pile. Thinks it must be good, as some part of the year they are short for water, and in consequence the furnace requires more pulling and cleaning, which wastes the iron. Will cost \$6 to get the iron to Philadelphia by canal. Thinks the heap worth \$300 or \$400. Make mostly stove castings. Ask \$90 per ton and \$50 for pig iron. Started for Gettysburg, 27 miles. Arrived at 5 o'clock, and at 7 o'clock left in stage for York, 28 miles, and arrived at McGrath's tavern at 2 o'clock in the morning. Very cold, and the roads very bad. Slept but little.

February 12, Sunday Morning. Got up but little rested. Eyes look as if I had not slept for a week. Walked out about noon. The houses, nearly all of them, have seats each side of the door, and as it was pleasant the most of them were filled with ladies sunning themselves and looking at passers-by. In the evening attended German Lutheran Church.

February 13. The coldest day we have had this winter. Went to see Mr. Louks, who with Mr. Baker have been running the Susan Ann Furnace, 13 miles from York Furnace. Has been built four years. They have 400 or 500 tons pig iron on hand, some of it at the river 4 miles below Columbia. Will sell it where it lays for \$36. Will cost \$4 to get it to Philadelphia, or will take \$40 at Philadelphia. Took dinner with him. He says the furnace is to be sold soon at sheriff's sale. Have to cart ore 9 miles.

February 14. Started at 2 o'clock from York. Was obliged to ride outside. Horses ran and broke down the coach. Arrived at Columbia at 7 o'clock, 12 miles, the

bridge  $1\frac{1}{4}$  miles long. Saw one of the owners of Elizabeth Furnace 15 miles from Lancaster. Have a large cinder heap, but no water to spare. Also saw one of the Coleman's. Says that the owner of the furnace is dead, but the executor would sell the cinder heap at Cornwall, but can spare no water to work it. They have one other furnace, and would sell the cinder iron by the ton but no other way. Make forge pig, and is all sold. Says Mount Hope Furnace is owned by Grubbs, near Cornwall, 20 miles from Lancaster; makes forge pig. At 12 o'clock hired a horse and started for Conowingo Furnace, 16 miles, owned by Hopkins & Brooks. Saw Mr. Hopkins. Says they will not sell their cinder heap at any price. It is very large. Make stove castings and pig iron. Have sold pig iron for \$60 in Philadelphia. Have sold all they can make this season, and have orders for more castings than they can make at \$90 per ton. Also own the forge where Perdue & Co. (Mr. Jewett of Philadelphia) carry on work. Returned to Lancaster at 8.30 o'clock, and put up at the Shakespeare Hotel, Scholfield's.

February 15. At 8 o'clock started for Reading by stage. Very bad passing; the snow in many places 4 or 5 feet deep. After going 16 miles by coach, took a sleigh and went 16 miles by sleigh, one-third bare ground and many banks. Arrived at Reading 5 o'clock. Called on George M. Keim, president of the Berks County Bank, a very fine man. He is concerned in several furnaces. Says that we can have water at some of them, and some of them we cannot. Advises me to go to Swarts' Furnace in the morning. Says he will find me a horse, and then take the Pottsville stage at 2 o'clock to two furnaces 20 miles up toward the coal mines. Had some rain to-day, and is thawing very fast to-night.

February 16. Took Mr. Keim's horse and rode to Swarts' Furnace, 4 miles. They make pig iron. Have a large cinder heap, but very little iron in it. The furnace is run very saving, and the cinder runs off mostly clear, and they are also short for water. They say they get \$44 per ton for forge pig. Returned to Reading. Saw Mr. Keim; gave me a letter to Nicholas Jones at the Schuylkill Furnace; also gave me a letter to Curtis & Leavins, Boston. Wishes to sell them boiler iron, which he says is of the first quality, and gets 10 or 10½ cents per pound. Says that the German language is the finest in the world. He wishes me to send him samples of ore and coal from our region. The Joanna Furnace is owned by Darling & Smith, Reading. The furnace is 14 miles from Reading. Have a large cinder heap. Warwick Furnace, Potts agent Hopeville, owned by Brook, are within 4 or 5 miles of Joanna. All make castings.

February 16, Afternoon. Took stage for Schuylkill Furnace, 1 mile from Hamburg, owned by Jones, Keim & Co., called also at the Windsor Furnace. It is on the bank of the canal, 17 miles from Reading. The cinder has been taken to build wharfs and roads, is so scattered that it could not be used to any advantage. The new Windsor Furnace is 3 miles from the above, but they are short for water. Of course, I did not visit it. Have had a very rainy afternoon. Put up for the night at the furnace. Found very fine people. Saw Mr. Vevins of Boston.

February 17. Cold and snowstorm. Started at 7 o'clock for Reading, arrived at 11 o'clock, and at once started for Joanna Furnace with Mr. Keim's horse. Went to the furnace, 14 miles. They make mostly stove castings. Have a large cinder heap, and the furnace has been in operation over 100 years. They have a cinder mill, and have worked it. Some say that it costs only \$6 or \$8 per ton to get it out. Mr. Smith says he will sell it for \$14 per ton in the heap if General Darling will agree to it, and he thinks he will. They cannot spare water to work it generally after August. Left for Hopewell. Arrived at dark, 7 miles from Joanna. Found Mr. Brooks a fine man. Spent the night with him. He makes stove castings. Sells to Pond, Bates, Badge & Butler. Mr. Butler was there this week, and spoke for 40 tons at \$90, six months, delivered at Philadelphia. Has a large cinder heap furnace. Has been in operation 80 years. Have no water to spare, except in the spring. Says that he burns 6000 cord of wood per annum, and the growth of his land is 400 cord per year. Make the Albany stoves.

February 18. Went to the Warwick Furnace, owned by the Messrs. Potts. Furnace 106 years old. Make stove castings; 5 miles from Hopewell, direct to Pottstown Post Office, Montgomery County, Pa. They have a very large cinder heap and two cinder mills, but have not been used for some years. Say that they got out from 1200 to 1500 per day. The agent is now a member of Congress. Will write us soon. Arrived Reading at 4 o'clock. Called at Messrs. Keim's rolling mill; a very fine mill; engine, 200 horse-power; balance wheel, 30 tons. Make boiler iron and nails. Are making preparation to make sheet iron. Say they make 1500 tons blooms at their own forges. Took tea with Geo. M. Keim. Called on General Geo. Keim. Says he will write me about the Reading cinder heaps. One of them is where there is no works carried on at present. The weather has been severely cold yesterday and to-day. Saw Roswell Woodward, who is at Harrisburg with I. Pratt, making nails and sawing staves. Says Albert Pratt is sawing staves. The Reading Furnace Estate, with 8000 acres of land, was



purchased not long since by General Geo. Keim and others for \$160,000.

February 19. Started from Reading at 8 o'clock, and rode by stage to Norristown, 36 miles by railroad, 16 miles to Philadelphia. Arrived at 5.30 o'clock. Stopped at Congress Hall. In the evening attended Baptist meeting.

February 20. Saw Wallace, Chandler & Co. They say a man in Baltimore has 300 tons cinder iron for which he asks \$20 per ton. They expect to see him. Saw Samuel Richards, owner of the Martha Furnace, and several others in Jersey. The Martha is 40 miles from Camden. Says that they have plenty of cinder and water, and have a cinder mill. Will sell the iron in the heap. Says the iron is worth \$25 per ton, and cost from \$3 to \$5 per ton to get it out. Went to the navy yard. Saw the "Pennsylvania." The guns she is to carry weigh about 60 cwt., the anchor 11,669 to 21. Took the boat for Camden at 7 o'clock in the morning, and beat about two and one-half hours without getting 100 yards from the wharf in consequence of the ice. We then went across the ice on foot, and had our baggage carried in barrels and sleds to railroad, and arrived at Amboy at 2 o'clock. Took steamboat for New York, and arrived at 5 o'clock, and put up at Foster's Eastern Pearl Street House. Cold, stormy day.

February 22. Inquired the prices of iron. Found it to be a little lower than when I went. Warm day. Very muddy in the streets.

February 23. Expected to leave in the boat at 3 o'clock, but in the morning it snowed and turned to rain and rained most of the day and evening, so that the boat did not start. Is to leave the 24th at 1 o'clock a.m. Bought 20 tons Monckland pig iron of Caswell & Murdock on six months; \$62 from the time the iron is shipped. Saw Sanford Leonard, I. Robinson and Foster Bryant by this day's boat.

February 24. Left New York at 10 o'clock a.m. Cold, raw wind.

### President Clarke of the Lackawanna Steel Company.

At a directors' meeting of the Lackawanna Steel Company, held on October 27, E. A. S. Clarke of Chicago was elected a director and president of the company, to fill the vacancy caused by the resignation of Walter Scranton some months since. Mr. Scranton has severed all connection with that company as chairman and as a director. Moses Taylor, first vice-president, who has been acting as president since the resignation of Mr. Scranton, will continue to discharge his regular duties. George L. Reis, second vice-president and general manager, continues in his old position at Buffalo. Mr. Clarke will make his headquarters in New York and will take charge toward the beginning of the new year, or as soon as he can make arrangements to leave the position which he now holds as general manager of the International Harvester Company, Chicago. Mr. Clarke was graduated from Harvard College in 1884, subsequently taking a course in the Massachusetts Institute of Technology. He began his metallurgical career under Robert Forsythe at the Union Steel Works, Chicago, and eventually became general manager of the Illinois Steel Company. In 1899 he resigned that connection for the purpose of taking charge of the erection of the Bessemer plant of the Deering Harvester Company, and upon the organization of the International Harvester Company became its general manager.

**Foundry Matters of Interest at the St. Louis World's Fair.**—The management of the Louisiana Purchase Exposition have set apart November 14 and 15 as special days for foundrymen. The Model Foundry on the Exposition grounds is now working regularly and tests will be made in one or more of the cupolas of coke from different parts of the United States. Coal is being shipped from various quarters of the country, the coking qualities of which will be tested in three of the coke ovens on the grounds. When this coke is at all promising it is analyzed and tested in every practicable way, including actual cupola experiments.

In describing the new Niles electric hoist in last week's issue the mistake was made of stating that it is built at the Niles Tool Works, Hamilton, Ohio. All electric trav-

eling cranes and hoists built by the Niles-Bement-Pond Company are, of course, made in its crane department at Philadelphia, Pa.

### National Metal Trades Association Notes.

CINCINNATI, OHIO, October 31, 1904.—The Plan and Scope Committee of the association met in the Cincinnati offices on Tuesday and Wednesday of last week. The two days were spent in discussing the various matters referred to this committee by the last convention of the association and in formulating plans for facilitating the work of the organization, particularly with reference to securing the affiliation and close co-operation of local employers' associations throughout the country. The Administrative Council was in session Thursday and Friday. A great amount of routine business was disposed of and various reports and recommendations were acted upon. The members of the council were unanimous in the statement that the affairs of the association were never in better shape, and that the perfect loyalty of the membership has never been more apparent. Action was taken respecting the distribution of the reserve fund of the association, and additional banks were selected as depositories. It is the policy of the association to distribute its funds in banks located in various industrial centers throughout the country, and as its reserve fund grows additional depositories are determined upon. The result of the mail ballot recently taken on the subject of change in initiation fee was presented to the council, and such amendment was found to have passed by an overwhelming majority of the votes of the members. This amendment was to article 8, sections 1 and 2, of the by-laws, which read as follows:

Section 1. Each applicant for membership, upon being notified of his election, shall pay into the Reserve Fund as an initiation fee, on such terms as the Administrative Council may decide, such sum in proportion to the unexpended balance of the Reserve Fund as the number of operators employed by him bears to the total number employed by all the members according to the last quarterly report hereinafter mentioned.

Sec. 2. A member resigning from this association through retiring from business, having paid all dues and assessments, shall have returned to him from the unappropriated Reserve Fund a sum in proportion to his contribution to the last two assessments.

These sections before being amended required an initiation fee based upon the number of men employed by any concern, while the change makes the fee for membership a flat rate of \$25, without regard to the number of employees.

It was also determined to change the name of the monthly magazine published by the association from *The Bulletin* to *The Open Shop*, it being felt that the latter name more correctly conveys the scope of the publication, which has far outgrown the original purpose of a monthly bulletin of the affairs of the association. *The Open Shop* will treat all phases of economics relating to employer and employee. Its paid circulation is already quite large.

The council designated March 30 and 31, 1905, as the time and Chicago as the place for holding the next annual convention.

Reports from various parts of the country indicate that the several unions of metal working mechanics are busy strengthening their organizations and preparing for aggressive campaigns of extension. All indications point to extreme activity among these unions so soon as better business conditions prevail. At present there is little trouble anywhere in the country, although the machinists are keeping up a semblance of a fight in two or three places.

The saw makers employed by the Curtis & Co. Mfg. Company, St. Louis, went out on strike because a nonunion man was employed. This company has now declared that it will maintain an open shop in that department, as it does in all other departments of its business.

O. C. Gayley has been elected second vice-president and placed in charge of the sales department of the Pressed Steel Car Company, the office of manager of sales, Eastern district, being abolished.

## MANUFACTURING.

### Iron and Steel.

The Reliance Tube Company, Limited, organized in Pittsburgh some months ago, expects to have its new plant at Brackenridge, near Pittsburgh, in operation early in November, manufacturing charcoal iron and steel boiler tubes and pipe. A number of orders for boiler tubes from 2 inches up to 6 inches in size have already been entered. Charles Bailey is chairman; James A. Kelly, secretary, and Charles C. Henderson, treasurer. The office is in the Arrott Building, Pittsburgh, and Charles C. Henderson will be active in the management of the works.

The work of construction on the new plant of the Boyne City Charcoal Iron Company, at Boyne City, Mich., is progressing rapidly and completion of the plant is looked for in a few months. The furnace will have a capacity of 100 tons a day and will give employment to about 75 men.

The Hinkle Furnace of the Ashland Iron & Steel Company, Ashland, Wis., which was blown out August 2, was put in blast a few days since. During the time the furnace was idle thorough repairs have been made and improvements added, notably the installation of a third fire brick stove by D. Lamond & Son, Pittsburgh, Pa. The last blast of this furnace extended from February 1, 1901, to August 2, 1904, with an output of 127,276 tons of pig iron.

It is officially denied that the Carnegie Steel Company of Pittsburgh intends to concentrate the Painter-Clark and Lindsay-McCutcheon hoop mills, in the Pittsburgh district, at Monessen, Pa. A. C. Dinkey, president of the Carnegie Steel Company, states that the company is perfectly satisfied with the present location of the plants and has no intention whatever of removing them.

The Acme Wire Company, recently organized with a capital stock of \$150,000 at Cuyahoga Falls, Ohio, will soon start up. It occupies the former plant of the Cuyahoga Wire & Fence Company. E. A. Henry is general manager. The product to be turned out is wire rods, annealed and bright market wire, coped and tinned market wire, tinned mattress and broom wire. Capacity, 50 tons a day in all departments.

Struthers Furnace of the Struthers Furnace Company, at Struthers, Ohio, blew in last week.

The Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, has received an order from the Emlyn Iron Works, East Chicago, Ind., for a heavy galvanized roof made of refined puddled iron sheets, to cover a new mill being erected by the latter.

Robert E. Jennings, receiver of the Carpenter Steel Company, New York, has filed his final accounting in the Chancery Court at Newark, N. J. It shows that since Mr. Jennings' appointment as receiver there has been an increase in the assets of the company of \$29,052, the assets on October 1 being \$570,432 and the liabilities \$345,458. An order was signed directing the receiver to sell to the Reorganization Committee all the property of the company on the terms recently published. Later the old company was formally dissolved, and articles for the incorporation of the new company with a capital stock of \$1,200,000 were immediately filed with the Secretary of State of New Jersey.

The Bryden Horse Shoe Company, Catasauqua, Pa., is to build an addition to its plant, 50 x 180 feet, to house a new billet mill. A 20-inch train and the necessary equipment in the way of boiler, shears, &c., will be installed. The company now has most of its iron rolled at other mills, but when the new department is completed the iron will be rolled there, ready to go into the main department to be turned into horseshoes.

The Colorado Fuel & Iron Company, Pueblo, Col., has increased its capital stock from \$39,200,000 to \$46,200,000. At the recent annual meeting the officers were re-elected.

The Garrett-Cromwell Engineering Company, Cleveland, Ohio, has prepared the plans and is asking bids for a 28-inch beam mill, to be constructed under its supervision at the plant of the Eastern Steel Company, Pottsville, Pa.

Topton Furnace, Pa., of the Empire Steel & Iron Company is being blown in.

Another attempt will be made on November 26 to sell the old plant of the Zanesville Iron Company, at Zanesville, Ohio. It has been offered for sale three times by a master commissioner but no offers were made. It has been reappraised at \$34,500, and two-thirds of the appraised value, or \$23,000, will buy it. A prospective purchaser has deposited a check for \$2000 agreeing to buy it at that figure, and as other parties are also after it it is certain that the plant will be sold.

The Cherry Valley Iron Company, Pittsburgh, blew in its Cherry Valley furnace, at Leetonia, Ohio, on November 1. This stack has been entirely rebuilt and has been equipped with three Massicks & Crooke stoves, 21 x 85 feet in size, which were built by George W. McClure, Son & Co., Bessemer Building, Pittsburgh. The furnace blew in on foundry iron and is expected to turn out 350 to 400 tons per day.

The New Castle Forge & Bolt Company, New Castle, Pa., will probably increase its capital stock from \$240,000 to \$400,000 within the next year, in order to erect a merchant bar mill. The company has felt the need of a bar mill ever since its forge and bolt plant was erected.

The North Sharon Works of the Carnegie Steel Company, at Sharon, Pa., are installing an independent water supply plant at a cost of \$15,000. The South Sharon works of the same company are resuming in full in nearly all departments.

### General Machinery.

The Harrison Machine Works, builder of threshing machinery, Belleville, Ill., is moving from the present location to a newly erected factory on West Third street. The new factory is divided into two sections, one of which is one story, 50 x 100 feet, and the other is two stories, 50 x 80 feet. Machinery used at the old plant has been transferred to the new one and some new machinery has been purchased and installed.

The Connersville Blower Company, Connersville, Ind., owing to the increase in the demand for its productions, is erecting a new machine shop, a steel and brick structure 100 x 300 feet, two stories, on the west side of the present plant, which will be equipped with a 40-foot span Pittsburgh travelling crane and other necessary machinery. The present warehouse of the company is rapidly being converted into a power house, in which will be installed a new engine and dynamo. Some additional machinery will be required.

The business of Roberts, Schaefer & Co., consulting and contracting engineers for coal mining plans and coal washeries, Chicago, and of the Stewart Washer Company, Birmingham, Ala., has been consolidated and the combined companies will in future be known as the Roberts & Schaefer Company. The main office of the company will be at 1275 Old Colony Building, Chicago, while a branch office will be conducted at Birmingham, Ala.

The Manistee Iron Works, Manistee, Mich., is building a large salt-making plant to be shipped intact to England. It is claimed that the plant will be one of the largest of its kind in the world and will be the first vacuum process plant to be erected in England.

Because of the numerous orders in hand the Skinner Chuck Company, New Britain, Conn., has been obliged to run the plant 14 hours a day for some little time, and is now running on that schedule. The outlook for future business, both foreign and domestic, is very encouraging. In August the company installed a new engine and made other improvements in the plant, and it would seem that these changes were made just in the nick of time.

The Haydn, Roth, Evans Company, Cincinnati, Ohio, is offering the new and improved Atlas tapping machine, especially adapted for fast tapping, and make the claim that the saving of taps alone will more than pay for a machine in a short time. It is so simple that any boy can operate it. The company is willing to send the machine on 30 days' trial; if not satisfactory can be returned. A steady increase in the demand for this tool is reported, and the company looks forward with great expectations to the coming year, which gives promise of being an exceptionally good one for manufacturers of every class of machinery.

The creditors of the Woodward & Rogers Company, manufacturers of machine tools, Hartford, Conn., will receive a dividend of 51 per cent. on their claims. Whatever assets are remaining will go to the receiver, by order of the Superior Court.

The William Ward Machine Tool Company, Pittsburgh, has purchased an acre of ground on the west side division of the Wabash Railroad, near Pittsburgh, having a frontage of 400 feet, and has placed a contract for a steel building, to be used for warehouse purposes.

A bender for bending the shanks or necks to the cultivators for attaching the steel feet is required by the Willis Cultivator Company, Skipwith, Va., which has recently enlarged its shops. The company recently installed some additional machinery and now has a capacity for turning out 25 cultivators a day. Quotations are desired on square edge bar iron  $\frac{1}{2}$  x  $1\frac{1}{2}$  inches.

The Florida Cross Tie Machine Company, Jacksonville, Fla., recently incorporated, has purchased the patent for a machine for hewing railroad cross ties, bridge timber and dock timber from A. W. Barrs, and will manufacture the machines in Birmingham, Ala. The company will buy the boilers, each machine requiring a 25 horse-power portable boiler. Address A. W. Barrs of Barrs & Dancy, Jacksonville, Fla.

The Peerless Motor Car Company, Cleveland, which is erecting a new plant, has placed orders with the Pattison Machinery Company and with the Motch & Merriweather Machinery Company for a number of new tools. The last mentioned company has recently succeeded to the business of the Cleveland branch of the Marshall & Huschart Machinery Company of Chicago.

The Strong, Carlisle & Hammond Company, Cleveland, has secured an order from the American Ball Bearing Company, Cleveland, for a number of machine tools for its large factory addition.

William B. Ridgely of Washington, Frank M. Faber of Pittsburgh, and Norman C. Raff of Canton, Ohio, are reported to be forming a company for the purpose of going into the manufacture of pneumatic tools of various kinds. It is stated that a proposition will be made to the Board of Trade of Canton to locate the plant in that city.

The Brinly-Hardy Company, manufacturer of plows, Louisville, Ky., is making a number of improvements to its black-



smith and wood working departments. In the blacksmithing department a number of hammers and punches have been installed made by Williams, White & Co., Moline, Ill., and the Long & Allstatter Company, Hamilton, Ohio.

#### Power Plant Equipment.

The Battle Creek Gas Company, Battle Creek, Mich., is building a boiler house, 26 x 41 feet, and has purchased a 125 horse-power tubular boiler from the Pennsylvania Boiler Works, Erie, Pa. The Battle Creek Company is also erecting an elevator house, in which will be installed a Gardner engine and drum elevator.

The East Lyme Street Railway Company will build an electric railway from New London to Niantic, Conn., a distance of 11 miles. A power station will be established.

The Seneca Electric Company, Chicago, is erecting an electric light plant at Seneca, Ill., which will be one story, 32 x 40 feet. The equipment, which consists of two 100 horse-power boilers, one 140 horse-power engine and one 100-kw. alternator, has been purchased.

The contract recently secured by Chas. L. Vickers, Houston, Texas, from the city of Houston is for one 5-inch bronze fitted centrifugal pump capable of handling 800 gallons of water per minute against a total elevation of 25 feet. The pump will be driven by a water proof vertical motor, 500 volts, direct current, built by the Northern Electrical Mfg. Company, Madison, Wis.

Chippewa Engine Works, Sault Ste. Marie, Mich., reports that its machine shop is nearing completion and that most of the equipment is in place. The approximate cost of this plant is about \$15,000. The company is also building a foundry which will not be equipped until spring. This will cost between \$10,000 and \$12,000.

The new isolated plant installed in the Twenty-third Regiment Armory, Brooklyn, N. Y., will contain two 75-kw. Northern generators direct connected to Harrisburg engines operating at 275 revolutions per minute. They also have a 35-kw. 600 revolutions per minute Northern generator belted to a Nash gas engine.

The Allis-Chalmers Company, Frick Building, Pittsburgh, has been awarded the largest contract for blowing engines placed this year by any individual company. The order consists of three 46 and 86, 84 and 84 x 60 inch "steeples" cross compound furnace blowing engines for the blast furnaces of the Lackawanna Steel Company, at Buffalo, N. Y.

The Wilkinson Turbine Company, Birmingham, Ala., has been incorporated with a capital stock of \$200,000, for the manufacture of steam turbines under the patents of James Wilkinson, who is president. F. M. Jackson is vice-president; J. M. Dewberry, secretary and treasurer, and R. D. Johnston, Jr., attorney.

At a meeting of the creditors of the Parkhurst Boiler Company, Oswego, N. Y., it was decided to sell the plant at auction on November 18.

The Board of Public Service of Canal Dover, Ohio, has placed a contract with Henry R. Worthington, New York, for a duplex compound condensing pumping engine of a capacity of 2,000,000 gallons. The price was \$5525.

#### Foundries.

Stockholders of the City Foundry, Lorain, Ohio, have filed a petition asking that the company be declared insolvent. The company was organized in June, 1903.

The Gartland Foundry Company, Marion, Ind., has completed the erection and completion of its plant for the manufacture of gray iron castings. The foundry is 112 x 300 feet and cost about \$40,000.

The Isthmian Canal Commission, Washington, D. C., will receive bids until November 19 for one excavator sprocket casting pattern, 60 steel castings from the pattern, 400 steel links, estimated weight 460 pounds; 200 steel blocks, estimated weight 1270 pounds; 400 steel pins, cold rolled, estimated weight 764 pounds; 4800 steel links, estimated weight 5400 pounds; 1200 steel pins, cold rolled, estimated weight 2020 pounds; 1200 1-inch steel pipe thimbles, estimated weight 600 pounds; 1200 steel washers, estimated weight 200 pounds. These articles are intended for use in connection with repairs and maintenance of excavator and link propelling chain used in constructing the Panama Canal.

The Marion Malleable Iron Company, Marion, Ohio, has been placed in the hands of a receiver, John A. Huber, secretary and treasurer of the company, being appointed. The action was taken to settle the estate of the late Edward Huber and to effect a reorganization of the company.

#### Bridges and Buildings.

The Wichita Bridge & Iron Company, Wichita, Kan., is in the hands of a temporary receiver for ten days. No action has as yet been taken by the court for disposition of the business longer than that time. The assets are placed at nearly \$100,000 and the liabilities at \$37,000.

The Burrell Construction Company, Seattle, Wash., has secured the contract at \$34,000 for the construction of a steel bridge at Everett. The bridge will be 230 feet draw, with two 124-foot fixed spans.

The Cleveland, Akron & Columbus Railway Company will replace two of the largest wooden bridges on its line with steel structures in harmony with heavier roadbed being adopted all over the line.

General C. M. Spitzer, a wealthy business man of Toledo, Ohio, and owner of the Spitzer Building, has announced that he will erect a 16-story office building in that city. It has not been decided whether it will be constructed of reinforced concrete or steel frame with fire proofing. The building will have its own electric lighting plant and four 150 horse-power boilers will be installed. There will be six passenger and one freight elevators.

#### Fires.

The Neafie & Levy shipyard at Philadelphia, Pa., was damaged \$30,000 by fire on October 27.

The plant of the Bamburg Iron Works, Bamburg, S. C., was destroyed by fire October 20.

The shops of the Coal & Coke Railroad Company, at Bellington, W. Va., were destroyed by fire October 27. The loss is placed at \$20,000.

The elevator and hominy mill of the Nading Mill & Grain Company and the entire plant of the Vandergrift Wrench Company, at Shelbyville, Ind., were destroyed by fire November 1. The Nading company's loss is placed at \$50,000 and the Vandergrift loss at \$16,000.

#### Hardware.

The Economical Stove Company, Jacksonville, Ill., expects to make preparations next spring to do its own casting work. Buildings will be erected and machinery installed, but the exact details are not yet determined.

A new company has been organized at Ludington, Mich., to manufacture wagons and farm and garden machinery. The company, which will be known as the Brillhart-Cartier Company, has already secured a site and at once will commence the building of a factory, which will include a main structure, three stories in height and 60 x 100 feet, with several smaller buildings. It is expected that the plant will begin operations about January 1.

The plant and equipment of the National Emery Wheel Company, Worcester, Mass., formerly of Waltham, Mass., has been disposed of at mortgage sale to H. F. A. Lange of Worcester, acting as trustee for some of the stockholders. The business is to be continued by the Bay State Emery Wheel Company, which will be incorporated under Massachusetts laws. Mr. Lange is at present operating the business for the new owners.

The J. M. Russell Mfg. Company has moved its business from Woodbury to Milville, near Naugatuck, Conn., where it will occupy shops with excellent water power. Increased room will enable the company to enlarge its business, which has grown very rapidly since it was established three years ago. The new location will also provide better shipping facilities, which will permit of more prompt shipments. New machinery will be bought for the purpose of increasing manufacturing capacity. The company makes Vulcan bronze and steel sash chains, plumbers' chains, tank pulls and other brass goods.

The Nicholson Mfg. Company is the name of a new industry at Holly, Mich., of which W. B. Nicholson is the prime mover. A factory 28 x 80 feet is being erected and will be ready for operation about the first of the year. Steel wheels and steel wheel express wagons, steel sleds and other similar light goods will be manufactured.

The Tennessee Hardware & Specialty Company, Troy, Tenn., has just been organized with the following officers: Carroll P. Wilson, president and treasurer; R. L. Rochelle, first vice-president; J. Sam Jones, second vice-president; Jas. W. Pressly, secretary. The company has made arrangements for the manufacture of its product in the East.

The National Lock Company, Rockford, Ill., has increased its capital stock from \$5000 to \$50,000, enabling it better to handle its growing trade through carrying a larger stock. The company makes cabinet locks and sheet metal specialties.

#### Miscellaneous.

One of the largest freight elevator contracts ever placed was awarded last week by the Pittsburgh Terminal Warehouse & Transfer Company, now building large warehouses on the South Side, Pittsburgh, to the New American Elevator Company, Columbus, Ohio. It calls for the installing of 44 six-story elevators, each to have a 2-ton capacity and a speed of 100 feet a minute. The elevators will be set in fire proof shafts, protected by fire doors. They will be artistically finished on the outside and will have modern safety and operating devices.

The Chicago Bridge & Iron Works, Chicago, secured the contract for a 150,000-gallon tank and a 140-foot steel tower, to be erected for the city of Spring Valley, Ill.

B. H. Madison, San Francisco, Cal., who recently purchased the shipbuilding plant of Hay & Wright, also of San Francisco, has sold the plant to the Pacific Ship Yard & Ways Company, which company has also bought the plant of the Pacific Marine Railway & Ways Company, merging the two properties into one. The directors of the combined companies are: B. H. Madison, president; James Tyson, vice-president, and Joseph Hutchinson, George E. Billings and H. B. Madison.

It is understood that the General Electric Company is to install a pneumatic tube system throughout its shops in Schenectady, N. Y., to carry messages, blue prints, correspondence, &c., between the different departments.

### Lebanon Chain.

The Lebanon Chain Works, Lebanon, Pa., has just completed and shipped to the Brooklyn Navy Yard two cables of 120 fathoms each, 2½ inches diameter iron chain, for the battle ship "Connecticut." The iron for this large chain was manufactured to special requirements, meeting the most exacting physical and chemical tests, exceeding, in fact, the specifications in many respects. It is well known that the requirements for this battle ship cable are the most difficult to fill of all wrought iron specifications, but after considerable expense and time the American Iron & Steel Mfg. Company, Lebanon, was successful in furnishing the required quality. Specimens taken promiscuously from the iron gave the following results: Elastic limit, 30,560 pounds per square inch; tensile strength, 50,550 pounds per square inch; elongation in 8 inches, 38.75 per cent.; reduction in area, 47.8 per cent.

The requirements called for a strength of 443,000 pounds for the finished chain, and a proportionate proof test, whereas samples of three links each taken from the chain broke at 485,000, 502,000 and 513,000 pounds, far above the specifications. In this test the links stretched from 1½ to 2½ inches, with a reduction in area of 15-64 inch. The samples referred to, which have given such high results, are on exhibition at the offices of the Lebanon Chain Works, where they can be seen and examined by any one interested in high grade chain or iron. The test and inspection were made by R. L. Ogden, Government inspector, who has just made a final test and inspection of another suit for delivery to the Newport News Shipbuilding & Dry Dock Company, Newport News, Va., to equip another battle ship. The Lebanon Chain Works has five more suits to manufacture, and the managers feel highly elated over the successful issue of a very difficult task.

### PERSONAL.

A. O. Norton, the Boston lifting jack manufacturer, has been entertaining a party of railroad friends at his fishing preserves in the Lake St. John district, Canada, in his summer home, named "The House that Jack Built." He made the trip in an automobile.

Charles S. Farquhar, treasurer of the Chandler & Farquhar Company, machine tools and supplies, Boston, sailed for Europe October 11 for a tour of several weeks, combining business and pleasure.

Leading officials of the National Tube Company are making an inspection of the company's plants. Last week the party inspected the Youngstown works, Youngstown, Ohio, and the seamless tube mill at Ellwood City, Pa. The inspection party consists of W. B. Schiller, president; Edward Worcester, first vice-president; John D. Culbertson, second vice-president and treasurer; Taylor Allderice, third vice-president; Peter Boyd, general superintendent; C. E. Patterson, mechanical engineer; J. F. Townsend, traffic manager; J. H. Nicholson of the Shelby Steel Tube Company; F. H. Crockard, manager of the Riverside plant, and G. G. Crawford, manager of the McKeesport plant.

It is said that James A. Chambers, formerly president of the American Window Glass Company, Pittsburgh, has been asked to return to that position.

W. H. Packer, formerly superintendent of the 48-inch plate mill at the Homestead Steel Works of the Carnegie Steel Company, has resigned to become superintendent of the plate mills being erected by the National Tube Company (of Ohio) at Lorain, Ohio. Mr. Packer was presented with a handsome gold watch and chain by the employees of the Homestead mill.

Persifer F. Smith, in charge of the Wellsville Works at Wellsville, Ohio, and Wood Works at McKeesport, Pa., of the American Sheet & Tin Plate Company, has resigned on account of ill health and a desire to retire from active business. Mr. Smith was one of the owners of the Wellsville Sheet Steel Company at Wellsville, Ohio, before its absorption. It made a specialty of the manufacture of planished sheet steel, and Mr. Smith con-

tinued to give his attention to this in his capacity as manager of the Wood Works and the Wellsville Works. The officials of the American Sheet & Tin Plate Company greatly regret losing his valuable services.

F. Ernest Porter has resigned as superintendent of the Sharon Works of the Carnegie Steel Company, at Sharon, Pa. His successor has not been appointed.

### Labor Notes.

While the fact that the Goss Printing Press Company and several other Chicago machinists have found it necessary to put on night crews has given the disaffected International Association of Machinists better opportunities for violence than they have had for some time, and the result has been some waylaying and slugging, the general labor situation of Chicago may be said to be quiet and peaceable.

Blacksmiths employed by members of the Chicago Metal Trades Association, to whom a reduction in wages was submitted in May, have been following the Fabian policy, interposing all sorts of objections and delays to the arbitration plan for the purpose of maintaining the old wage scale as long as possible. No definite conclusion has yet been reached and the men are working on the old wage scale, conforming their hours in each case to those of the plants in which they are employed, with the maximum of 54 hours a week.

Trouble is feared by Illinois coal mining companies because the hoisting engineers, whose contract expired November 1, have positively refused to accept the 5½ per cent. reduction which was accepted by the miners and other mine employees last spring. The Illinois Coal Operators' Association has tendered to the Brotherhood of Coal Hoisting Engineers a proposition to arbitrate, but the engineers have refused any arbitration proposition and insist upon a continuation of the full wage of the present contract. The Illinois Coal Operators' Association is said to be the only association of operators of bituminous mines that now recognizes the Brotherhood of Coal Hoisting Engineers, and the natural outcome of the contest between the two bodies will be the repudiation of the engineers' union by the association and the employment of nonunion engineers in Illinois mines at the same wages that are paid in other States.

The Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, has asked the men employed in its skelp mill to accept a reduction in wages to apply on steel only. This skelp mill is governed by a special scale, which can be terminated by notice given by either the Amalgamated Association or the company. The matter will very likely be satisfactorily arranged in a sort time.

The officials of the Amalgamated Association at Pittsburgh are urging the members to contribute as liberally as possible, in addition to the strike assessment, to the support of the men on strike at the hoop mills of the Carnegie Steel Company, at Girard and Youngstown, Ohio. In the last issue of the *Amalgamated Journal*, the official organ, an urgent plea is printed that the members contribute as much money to the treasury of the association as possible, as it is badly in need of funds. The article says: "These are strenuous times for the Amalgamated Association. Perhaps at no time in the history of the organization has it been called upon to face so many different strikes at one time."

All offers on the part of President Shaffer of the Amalgamated Association to get the officials of the United States Steel Corporation to grant another conference to settle the strike at the hoop mills of the Carnegie Steel Company at Girard and Youngstown, Ohio, have failed. The Carnegie Steel Company will not go into any more conferences and will operate these mills on the policy outlined last July, when the strike started. The mills at Girard and Youngstown are in operation to nearly full capacity and already some high records for production have been made at them.



## The Iron and Metal Trades

The very great change which has come over the Iron market during the past month seems to make it necessary to guard against the use of extravagant expressions in referring to the condition of trade. Reports from all consuming centers indicate a scramble for Pig Iron. Commission houses could sell a very large quantity of Pig Iron for delivery far into next year if the furnace companies would permit them to do so. The quantity of Iron purchased since the buying movement began has been so large as to put the furnace companies into an independent position and they are not disposed to sell too far ahead, believing that the strength of the market will continue and by holding off they will be able to get higher prices. Conservatism is being preached and in every direction the danger of marking prices up too rapidly is pointed out, but the opportunity to get higher prices is very tempting.

The improvement which started with Pig Iron is working its way steadily into other lines. Consumers are now paying a premium of 50c. to \$1 a ton on Billets and Sheet Bars over the agreed price. The buying of Tubes and Wire is phenomenal, while Sheets also are very strong. A further decided improvement has occurred in Plates and Structural Material. The movement in Structural Material has been somewhat slow, but it is now showing a much better condition.

The Steel Rail trade is looking up. The Louisville & Nashville Railroad Company has placed an order with the Tennessee Coal, Iron & Railroad Company for 50,000 tons for delivery next year. The Tennessee Company is not a member of the Rail Association, but is co-operating closely with it. The fact is not so stated, but it is believed that this contract has been taken subject to the price which may be made by the associated Rail makers. No time has yet been announced for the Rail meeting, but this is not regarded with so keen an interest as some time since, because every day now strengthens the situation, and if any reduction is made in the price of Rails it is more likely to be done as a matter of policy than of necessity. While the mills in the association are not booking large orders, so far as can be ascertained, they are receiving numerous small orders.

Light Rails, which were selling at very low prices recently under the stress of sharp competition, have scored a moderate advance, as the mills are much better supplied with work.

The Tube manufacturers have made another advance of \$2 per ton on Merchant Pipe, effective November 1. This is the second advance of \$2 per ton in two weeks.

Old Material is rising in price in sympathy with the upward movement in Pig Iron. A particularly sharp advance has been made in Old Iron Rails. Consumers are disturbed by the higher prices now being asked on Scrap Material, as costs of production are thereby raised, while they fear it may be difficult to secure anything like a corresponding advance in the price of the finished product.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

Nov. 2, Oct. 26, Oct. 5, Nov. 4,  
1904. 1904. 1904. 1903.

### PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia .....	\$15.00	\$14.75	\$14.25	\$15.00
Foundry Pig No. 2, Southern, Cincinnati .....	14.75	13.75	12.00	12.25
Foundry Pig No. 2, Local, Chicago .....	15.00	14.50	13.50	13.50
Bessemer Pig, Pittsburgh .....	13.85	13.60	12.85	15.70
Gray Forge, Pittsburgh .....	13.10	12.85	12.00	13.50
Lake Superior Charcoal, Chicago .....	16.00	15.50	15.25	17.50

### BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh .....	19.50	19.50	19.50	27.00
Steel Billets, Philadelphia .....	22.00	22.00	21.50	26.00
Steel Billets, Chicago .....	22.50	22.50	22.50	28.00
Wire Rods, Pittsburgh .....	26.00	26.00	26.00	33.50
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	12.50	11.50	11.00	12.50
O. Steel Rails, Philadelphia .....	14.00	14.00	12.50	12.50
O. Iron Rails, Chicago .....	19.50	17.50	16.25	17.00
O. Iron Rails, Philadelphia .....	17.00	17.00	15.50	17.00
O. Car Wheels, Chicago .....	13.50	13.00	11.25	17.00
O. Car Wheels, Philadelphia .....	13.50	13.00	12.00	15.00
Heavy Steel Scrap, Pittsburgh .....	13.50	12.50	12.00	14.50
Heavy Steel Scrap, Chicago .....	11.50	11.50	10.50	12.00

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	1.43½	1.43½	1.43½	1.45
Common Iron Bars, Chicago .....	1.40	1.40	1.35	1.45
Common Iron Bars, Pittsburgh .....	1.35	1.30	1.30	1.40
Steel Bars, Tidewater .....	1.44½	1.44½	1.44½	1.70
Steel Bars, Pittsburgh .....	1.30	1.30	1.30	1.60
Tank Plates, Tidewater .....	1.54½	1.54½	1.54½	1.78
Tank Plates, Pittsburgh .....	1.40	1.40	1.40	1.60
Beams, Tidewater .....	1.54½	1.54½	1.54½	1.73½
Beams, Pittsburgh .....	1.40	1.40	1.40	1.60
Angles, Tidewater .....	1.54½	1.54½	1.54½	1.73½
Angles, Pittsburgh .....	1.40	1.40	1.40	1.60
Skelp, Grooved Steel, Pittsburgh .....	1.35	1.35	1.30	1.40
Skelp, Sheared Steel, Pittsburgh .....	1.40	1.40	1.35	1.50
Sheets, No. 27, Pittsburgh .....	2.00	2.00	2.00	2.50
Barb Wire, f.o.b. Pittsburgh .....	2.05	2.05	2.05	2.60
Wire Nails, f.o.b. Pittsburgh .....	1.60	1.60	1.60	2.00
Cut Nails, f.o.b. Pittsburgh .....	1.60	1.60	1.60	1.90

### METALS:

Copper, New York .....	13.62½	13.37½	12.87½	14.00
Spelter, St. Louis .....	5.15	5.20	4.95	5.40
Lead, New York .....	4.40	4.20	4.20	4.40
Lead, St. Louis .....	4.20	4.20	4.12½	4.30
Tin, New York .....	29.00	28.70	28.25	25.75
Antimony, Hallett, New York .....	7.25	7.12½	7.00	6.25
Nickel, New York .....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.49	3.49	3.49	3.99

## Chicago.

FISHER BUILDING, November 2, 1904.—(By Telegraph.)

The important features of the market are, of course, the rapid advances in Pig Iron and Old Materials, both of which are of such a character as to surprise sellers almost as much as they surprise buyers. There is little doubt that consumers have permitted their stocks in both Iron and Scrap to run down to a point where larger purchases than usual will have to be made even with a normal season's business, and the knowledge of this fact, coupled with the hope for another boom period in Iron and Steel, is leading producers to sell sparingly even on the present high market in the hope of obtaining still better prices later on. This policy on the part of sellers serves all the more to stimulate the buying movement. Some buyers are covering their requirements for some months ahead at the present figures, in the fear that still higher prices will prevail later on. The conservative element, however, has persuaded itself that present business conditions and the prospects for the immediate future do not at all warrant the rapid advances in prices made during the last two weeks, and accordingly are buying only sufficient tonnage to cover their immediate necessities. While the market in finished products seems to show a little improvement in actual trading and considerable borrowed strength, it is still a quiet market, characterized by hand to mouth buying in relatively small quantities. Until the market in Finished Materials improves radically it is argued that no justification can be found for the high prices now charged for raw materials, and that if finished products do advance at all it will be because makers are forced to raise their prices on account of the higher cost of their raw materials. Southern Pig Iron is held now at a minimum of \$12, Birmingham, for No. 2, for shipment this year, some factors asking \$12.25 to \$12.50. As a general thing \$12.50, and in some cases \$13, is asked for 1905 shipment. Local Northern

Irons have advanced 50c., the present minimum being \$15, at furnace, for Chicago delivery, some furnaces asking \$15.50. Iron for delivery in the first half of 1905 is quoted at from \$15.50 to \$16, but sellers are inclined to reduce their sales as much as possible until the market has settled down to a basis where there is some certainty of its future course. As a rule the Northern makers are not in sympathy with the recent startling advances precipitated by Southern furnaces, preferring a gradual to a sudden increase. Several new furnaces are scheduled to come into blast as quickly as preparations can be made. The demand for Billets, Rails, Structural Steel, Plates, Sheets and Tubular Goods is somewhat improved, but only slightly so in this market. Old Materials have made another startling advance, Old Iron Rails being \$2 a ton higher than a week ago. Metals are also stronger, with some advances likely before long. Coke is quite a little stronger and car shortage is beginning to be urged as an argument for early buying.

**Pig Iron.**—Pig Iron prices as quoted last week have been marked up along the line from 40c. to \$1 a ton. Southern producers are holding quite firmly at \$12, Birmingham, and are getting that price from large producers. With some producers this \$12 is still extended to deliveries covering the first quarter of 1905, but others are asking as high as \$13 for next year's delivery. Still other factors, as, for instance, the Sloss-Sheffield Company, are out of the market altogether, refusing to sell Iron at any price in this market, either for present or future delivery. Northern makers, in harmony with the strength shown in the South, have advanced their prices to the basis of \$15 and \$15.50, the lower price being for spot Iron, and the higher for the first quarter of next year; \$16 is asked by some Northern producers for the first half of next year. The general feeling among buyers is that these rapid advances are not justified by existing conditions, and that they are almost wholly anticipatory of the good times that are hoped to follow. If active business calling for the melting of large tonnages of Iron does not develop quickly it will be difficult for makers of Iron to hold their product to the present advanced figures, notwithstanding the fact that it is generally understood that stocks in the hands of smelters are meager. While some foundrymen have been stampeded into some rather heavy purchases, the attitude of many buyers in this Pig Iron crisis is to buy only sufficient tonnage to cover their immediate necessities and to take their chances for the future. It is true that business is somewhat better in the foundry trade, with the exception possibly of foundries whose main dependence has been on large structural castings, in which they must compete with the leading Pittsburgh fabricator. Even foundries that depend largely upon railroad work are experiencing an improved condition of business, although it is still far from what it should be. The quick jump in prices has resulted in hasty preparations to put in blast a number of furnaces both North and South that have been idle many months. When these come in and when the Southern makers who are at present out of the market decide to come in the task of holding prices up to the present level will be still more difficult. Iron makers, however, have persuaded themselves that the total producing capacity of furnaces will be taxed to its utmost to supply the demand for Iron during the next six months, owing to the fact that stocks are so low in consumers' hands. Makers of Ohio and Kentucky Silvers have advanced their price to the basis of \$18 at the furnace for 8 per cent. The only producer of Alabama Basic now in the market is holding that commodity at \$13, at furnace. The following prices are for 1904 delivery, but in certain instances some furnaces will sell limited quantities of Iron for the first quarter of 1905 at the highest figures given. We quote:

Lake Superior Charcoal.....	\$16.00 to \$16.50
Northern Coke Foundry, No. 1.....	15.50 to 16.00
Northern Coke Foundry, No. 2.....	15.00 to 15.50
Northern Coke Foundry, No. 3.....	14.50 to 15.00
Northern Scotch, No. 1.....	16.00 to 16.50
Ohio Strong Softeners, No. 1.....	16.30 to 16.50
Ohio Strong Softeners, No. 2.....	15.80 to 16.30
Southern Silvery, according to Silcon..	16.90 to 17.40
Southern Coke, No. 1.....	15.80 to 16.15
Southern Coke, No. 2.....	15.65 to 15.90
Southern Coke, No. 3.....	15.15 to 15.40
Southern Coke, No. 4.....	14.90 to 15.15
Southern Coke, No. 1 Soft.....	15.90 to 16.15
Southern Coke, No. 2 Soft.....	15.65 to 15.90
Southern Gray Forge.....	14.65 to 14.90
Southern Mottled and White.....	14.40 to 14.65
Malleable Bessemer.....	15.50 to 16.00
Jackson County and Kentucky Silvery,	
6 to 10 per cent. Silcon.....	19.30 to 20.30
Alabama Basic.....	... to 16.65
Virginia Basic.....	15.15 to 15.65

**Billets.**—Demand for Forging Billets from the local forge shops and from makers of Implements and Car Forgings is encouraging, and a fairly active business is the result. Prices are unchanged, as follows: 4 x 4 and larger up to but not including 10 x 10, \$24.50; 10 x 10 and larger, \$26.50; less than 4 x 4, \$26.50. Some makers charge \$4 above the 10-inch price for Billets 20 inches and larger. The renewed activity in shipbuilding on the Great Lakes and car building in Western car works, together with a gen-

eral betterment in business, is stimulating the demand for Billets quite appreciably.

**Rails and Track Supplies.**—Business is quiet pending the result of the election and the meeting of the Rail pool. Light Section Rails go at from \$20 to \$22, at mill, and Standard Sections are unchanged, of course, at the \$28 basis. Spikes and Splices are active, with prices unchanged, Bars being quoted at from 1.30c. to 1.35c.; Spikes at from 1.60c. to 1.65c., in car lots; Track Bolts, 2.20c. to 2.25c., base, from mill, with Square Nuts, and 10c. to 15c. extra for Hexagon Nuts. Store prices on Angle Bars, Track Bolts and Spikes are about 15c. above mill prices.

**Structural Material.**—Although it is known that car shops and shipyards are buying large quantities of Structural Materials, the general trade has shown little if any improvement. The tonnage being booked from the large industries named will, of course, tend to strengthen the mill prices of Structural Sections, and mills already are showing an inclination to turn down badly mixed specifications from unimportant buyers. Official prices are unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.56½c.; Chicago; Angles, 3 to 6 inches, ¼-inch and heavier, 1.56½c.; Angles, larger than 6 inches on one or both legs, 1.66½c.; Beams, larger than 15 inches, 1.66½c.; Zees, 3 inches and over, 1.56½c.; Tees, 3 inches and over, 1.61½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices on Structural Materials are 1.80c. to 1.90c. for Angles, Beams, Channels and Zees, base sizes, with 1.90c. to 2c. for 18, 20 and 24 inch Beams; Tees, 1.85c. to 1.95c. These prices are for either random lengths or cut to lengths.

**Plates.**—Notwithstanding the large tonnages of Plates that are going into Steel steamships and freight cars, the producing capacity of existing mills is so great that the fear expressed by producers and referred to last week that the time was not far distant when mills would be unable to take care of current demands is not shared by the buyers. Association prices are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 24 and up to 100 inches wide, carloads, Chicago, 1.56½c.; 3-16 inch, 1.66½c.; Nos. 7 and 8 gauge, 1.71½c.; No. 9, 1.81½c.; Flange quality, any width up to 100 inches, 1.66½c.; Sketch Plates, in Tank quality, 1.66½c.; in Flange quality, 1.76½c. Store prices on Plates are as follows: Tank Plates, in width up to 100 inches, ¼-inch and heavier, 1.75c. to 1.80c.; 3-16 inch, 1.85c. to 1.90c.; Nos. 8 and 10, 1.90c. to 1.95c.; No. 12, 1.95c. to 2c.; No. 14, 2c. to 2.05c.; No. 16, 2.05c. to 2.10c.; Flange quality, 25c. per 100 lbs. extra.

**Sheets.**—The firming up tendency alluded to last week is still in evidence, but it has not reached a point where prices have actually advanced. The following schedule represents current car lot prices, but from 5c. to 10c. per 100 lbs. lower may be done on large orders on desirable sizes and quantities of a size, particularly in the lighter gauges. Present Chicago prices in car lots are about as follows: Nos. 9 and 10, 1.66½c.; Nos. 11 and 12, 1.71½c.; Nos. 13 and 14, 1.76½c.; Nos. 15 and 16, 1.86½c.; Nos. 18 to 20, 2.01½c.; Nos. 22 to 24, 2.06½c.; Nos. 25 and 26, 2.11½c.; No. 27, 2.16½c.; No. 28, 2.26½c.; No. 29, 2.36½c.; No. 30, 2.46½c. Store prices are unchanged, except that the spread of differential between low and high prices has been reduced to 5c. and in some instances 5c. lower than the low prices can be done on desirable tonnages. No. 16 gauge particularly is being cut in price. Nos. 8 and 10, 1.90c. to 1.95c.; No. 12, 1.95c. to 2c.; No. 14, 2c. to 2.05c.; No. 16, 2.05c. to 2.10c.; Nos. 18 and 20, 2.20c. to 2.25c.; No. 22 and 24, 2.25c. to 2.30c.; No. 26, 2.35c. to 2.40c.; No. 27, 2.45c. to 2.50c.; No. 28, 2.50c. to 2.55c.; No. 29, 2.60c. to 2.70c. Galvanized Sheets show no change since last week, being offered at from 80 and 7½ to 80 and 10 discount, Pittsburgh, carload lots and larger, and selling from store here at 75, 10 and 5 and 75, 10 and 7½ discount from list.

**Bars.**—The leading producer of Iron Bars has advanced his price \$1 a ton, making the present figures range from 1.40c. to 1.45c., base, half extras, Chicago, car lots, and expresses the willingness to lose business that will not pay these prices. Steel Bars are unchanged on the basis of 1.30c., Pittsburgh, or 1.46½c., Chicago, and in spite of the talk of advance nothing has developed in this direction. The International Harvester Company is less inclined to make material reductions below the association price than heretofore, as it has booked a comfortable tonnage. Specifications on contracts both for Steel and Iron Bars are said to have been unusually large during the last two or three weeks, and quite a volume of new business is being booked by buyers who are fearful that an advance may shortly be made. Soft Steel Hoops are 1.71½c. rates, full extras; Soft Steel Channels, Angles and Tees, smaller than 3 inches, 1.70c. to 1.75c., base, half extras; Bar Iron, 1.35c. to 1.40c., base, half extras. Store prices at Chicago warehouses are: Soft Steel Bars and Bands, 1.65c. to 1.70c., base, half extras; Soft Steel Angles, Channels and Tees, 1.75c. to 1.80c., base, half extras; Iron Bars, 1.70c. to 1.75c., base, full extras; Steel Hoops, 2c. rates, full extras.



**Merchant Steel.**—Business is active both in the way of specifications on contracts and in the amount of new business that is being booked as late in the season as this; prices, however, are not being maintained absolutely, and there is scarcely an item on the list that is not cut in price by members of the association or outsiders in the face of desirable tonnages. Official prices, however, are unchanged as follows: Bessemer and Open Hearth Spring Steel to general trade, 1.85c. to 1.90c.; Smooth Finished Machinery Steel, 1.71½c. to 1.76½c.; Smooth Finished Tire, 1.66½c. to 1.71½c.; Flat Sleigh Shoe, 1.51½c. to 1.56½c.; Concave and Convex Sleigh Shoe, apparently unchanged at 1.66½c. to 1.71½c.; Cutter Shoe, apparently unchanged at 2.25c. to 2.30c.; Toe Calk Steel, 2.01½c. to 2.06½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots; Railway Spring, carload lots, 1.66c. to 1.71½c., with reductions for larger quantities.

**Merchant Pipe.**—The \$2 a ton advance in prices of Iron and Steel Pipe, Black and Galvanized, referred to in last week's issue, seems to have stimulated buying to some extent, coming as it did about the time of sharp advance on Pig Iron. Dealers have taken a fair tonnage for stock, but the total amount of Pipe carried in dealers' and jobbers' stock is estimated to be not greater than two months' supply.

**Boiler Tubes.**—Railroads are buying more freely of Boiler Tubes both for repair purposes and for new locomotives. A slightly better demand comes from contract boiler shops, but the business is still far from what it should be. The following are the official discounts, f.o.b. Chicago, for less than car lots, with two points better discount, or about \$4 a ton lower prices, on car lots:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches.....	46.35	41.35	52.35
1½ to 2¼ inches.....	58.35	41.35	40.35
2½ inches.....	60.35	46.35	43.35
2½ to 5 inches.....	66.35	53.35	{ up to 4 in. 50.85
6 to 13 inches.....	58.25	41.35	....

Store business on Boiler Tubes is increasing somewhat; prices nominally at least are unchanged as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches.....	42½	37½	40
1½ to 2¼ inches.....	52½	35	37½
2½ inches.....	55	37½	40
2½ to 5 inches.....	62½	47½	47½
6 inches and larger.....	62½	..	..

**Cast Iron Pipe.**—Pipe makers are still maintaining the old figures in the face of greatly increased cost of their Pig Iron, as they do not wish to have the present late buying movement interrupted. Columbus, Ohio, is in the market for and bids will close November 7 on 500 tons of 4 to 36 inch Cast Pipe. Bids will also close at Ottawa, Canada, November 11, on 20,000 feet of 10-inch Pipe. Prices are on the basis of \$27.50 for 4-inch Water Pipe, \$26.50 for 6-inch and heavier, and \$1 extra for Gas Pipe. These prices, however, will be shaded on very large lots.

**Old Material.**—Prices on Old Material have taken such startling advances that neither buyers nor sellers seem to know exactly what attitude to pursue. Most buyers, however, are buying only actual necessities, and paying the premiums to get prompt deliveries. Sellers are still inclined to dole out materials that have been piled up in their yards grudgingly even at the high prices current, in the hope of receiving still greater profits later on. No important railroad lists have been promulgated this week, and for that reason the prices quoted below represent figures paid to dealers by consumers and other dealers for the items named. While the actual consumptive demand seems to have increased somewhat, and while many melters of Scrap are short of material, the general impression is, as it is with Pig Iron, that the sharp advances of the last few days are not warranted by actual trading conditions and are made in anticipation of a boom in the Iron trades which is expected after the Presidential election is disposed of. The leading consumer claims to have sufficient materials bought to make him indifferent to the present flurry. We advance Old Iron Rails, \$2; Old Steel Rails, \$1; Car Wheels, 50c.; Iron Fish Plates, 50c.; Iron Car Axles, 50c.; Railroad Wrought, 50c.; Dealers' Forge, 50c.; Wrought Pipe and Flues, 50c.; Iron and Steel Axle Turnings, 75c.; Machine Shop Turnings, 75c.; Cast and Mixed Borings, 50c.; No. 1 Mill, 50c.; No. 1 Boilers, 50c.; No. 1 Cast, 50c.; Railroad Malleable, 50c.; Agricultural Malleable, 50c., making the list to read as follows, per gross ton:

Old Iron Rails.....	\$19.50 to \$20.00
Old Steel Rails, 4 feet and over.....	14.00 to 14.50
Old Steel Rails, less than 4 feet.....	12.50 to 13.00
Heavy Relaying Rails, subject to inspection.....	20.50 to 21.50
Heavy Relaying Rails, for side tracks.....	19.00 to 20.00
Old Car Wheels.....	13.50 to 14.00
Heavy Melting Steel Scrap.....	11.50 to 11.75
Mixed Steel.....	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates.....	\$15.00 to \$15.50
Iron Car Axles.....	19.00 to 19.50

Steel Car Axles.....	16.00 to 17.00
No. 1 Railroad Wrought.....	14.00 to 14.50
No. 2 Railroad Wrought.....	13.00 to 13.50
Shafting.....	13.00 to 14.00
No. 1 Dealers' Forge.....	10.50 to 11.00
Wrought Pipes and Flues.....	10.00 to 10.50
Iron Axle Turnings.....	9.00 to 9.50
Soft Steel Axle Turnings.....	9.00 to 9.50
Machine Shop Turnings.....	8.50 to 9.00
Cast Borings.....	6.00 to 6.25
Mixed Borings, &c.....	6.00 to 6.25
No. 1 Mill.....	8.00 to 8.25
Country Sheet.....	5.50 to 6.00
No. 1 Boilers, cut to Sheets and Rings.....	9.50 to 10.00
No. 1 Cast Scrap.....	12.25 to 13.00
Stove Plate and Light Cast Scrap.....	9.50 to 10.00
Railroad Malleable.....	11.00 to 11.50
Agricultural Malleable.....	10.00 to 10.50

**Metals.**—Copper and Tin have advanced sharply, while the other commodities are stationary in price. Casting Copper is ½c. higher, ruling from 13½c. to 13¾c. to-day, while Lake has similarly advanced, present quotations being 13¾c. to 14c. Pig Tin has advanced ¼c. to 1c., being now quoted at 30½c. to 31c., while Pig Lead is unchanged at 4.20c. for 50-ton lots, 4.30c. for car lots and 4.50c. for small lots. Sheet Zinc is stationary at 6¼c. for car lots of 600-lb. casks and 6½c. for smaller lots. Advanced prices on New Copper are reflected in higher prices on Old Copper and Brass; prices are as follows: Copper Wire and Heavy, 12½c.; Copper Bottoms, 11¼c.; Copper Clips, 12c.; Red Brass, 11¼c.; Red Brass Borings, 9¼c.; Yellow Brass, Heavy, 8¼c. to 8½c.; Yellow Brass Borings, 7½c.; Light Brass, 6½c.; Lead Pipe, 4.15c.; Tea Lead, 3¾c.; Zinc, 4¼c.; Pewter, No. 1, 18½c.; Block Tin Pipe, 25c.

**Coke.**—It is now difficult to get 72-hour Connellsville Foundry Coke at less than \$2, at the ovens, and some operators are holding firmly at \$2.25. Scarcity of water for quenching is said to be causing Coke operators serious trouble. Foundry Coke from Virginia and West Virginia ovens can be bought at from \$1.85 to \$2 at the ovens. Freight to Chicago from Connellsville and West Virginia operations is \$2.65 per ton, and from Wise County, Va., ovens, via the Louisville & Nashville, \$2.25.

## Philadelphia.

FORREST BUILDING, November 1, 1904.

The situation in the Iron and Steel trade has been somewhat excited during the past week, and at this writing it is difficult to determine its exact latitude and longitude. That the feeling has undergone a wonderful change during the past 30 days is clear to the most casual observer, but to what extent the change is warranted puzzles the most careful students. It may be the beginning of a great wave of improvement, or it may be one of those sudden spurts that occur periodically and that die out just as unexpectedly as they begin. There is some basis for a genuine improvement, however, which appears to be as follows: 1, That there is an unquestioned increase in consumption; 2, that there is an increase in the cost of production, and 3 (and obviously), that such conditions must necessarily lead to higher prices; hence the sudden impulse to buy as much material as can be had without advancing prices too far. The great danger in movements of this kind is in overdoing it, but where can the line be drawn between legitimate business and that which is speculative? Behind this movement there appears to be more or less manipulation for the purpose of securing higher prices for primary materials. Coke and coal and ores have all been worked so as to increase the cost of Pig Iron, but as yet finished products have not sympathized in the least. If the initiative had been in the demand for finished products, manufacturers would have had a better chance, and the movement would inspire more confidence, but with orders on their books at low prices, and an unexpected increase in the cost of raw materials, consumers are caught at a disadvantage. That this is a part of the game receives some credence with those who believe in the manipulation theory, but whether it be true or not does not change the fact that prices of Pig Iron are from \$1 to \$2 per ton higher than they were two months ago, while Billets are \$2 to \$3 lower; Plates and Shapes \$4 to \$6 lower, and Bars \$1 to \$2 lower. It is obvious, therefore, that some change must be made, as the mills cannot run with high priced raw material and low prices for finished products, yet that is what they have to do under present conditions. In its bearing upon values, and in endeavoring to measure the extent of the improvement, many difficulties are met with in sifting out the legitimate from the speculative. Granted, for instance, that the worst of the depression is over, and that a general recovery has commenced and will be maintained, there can be no doubt that the present movement is speculative, with a good chance, however, that it is well timed and will be successful. It began with the conviction that prices of Pig Iron were too low. Two or three weeks with no great activity demonstrated that prices were not going lower, and when they hold firm on a dull market they are very liable to advance when activity begins. This has been demonstrated during the past two or three weeks. So far it is not clearly established that any great increase has

been made in consumption, or that orders have been placed that will cause a great increase in the near future. There is reason to believe that such business will be forthcoming soon, but the recent heavy purchases have been confined mostly to Pig Iron, although a similar movement is sure to follow in finished products, speculatively if not legitimately. For this reason merchants and consumers, having noted the increased demand and the higher prices for Pig Iron, naturally conclude finished products will also be advanced. Consequently stores begin to stock up, consumers place larger orders, and so the movement extends until there is activity along the entire line. So far so good, but without a real genuine increase in consumption the market soon falls back into a dull, listless condition and possibly to a reaction in prices. It is not to be understood that this is likely to be the experience in the present movement, because as a matter of fact prospects are very good, but it should not be regarded as pessimistic when it is said that the foundation does not embrace all the elements of strength which would warrant implicit confidence as regards its permanency; but it will take time to prove that, and in the meanwhile there need be no fear of any immediate reaction. The sum and substance then appears to be that sentiment has developed confidence in values, which, in turn, has resulted in heavy purchases, and this in its turn has led to higher prices. The real test will be in consumption, and if that fails to measure up to the recent heavy buying it will be a great disappointment.

**Pig Iron.**—The market has been very strong during the past week and many large lots have been taken at full or advanced prices. The feeling appears to be that the advance has gone far enough for the present, not that there is much profit in Pig Iron even at the outside rates, but everybody knows what it means to overdo a good thing, and there will be danger in that if prices are carried any higher. The old adage of "creep before you walk" has not lost its force, and it applies very well to the Iron trade at the present time. The situation is so confused, however, that it is difficult to define its exact status with anything like certainty. It may be guessed at, and those whose guess is optimistic may be entirely right; but any opinion at this time cannot be based on entirely safe ground. It is not necessary to discuss the whys and the wherefores; all that is known for a certainty is that the feeling has undergone a great change and that purchases have been made at advancing prices in the belief that they are warranted by the general outlook. It is a good time for buyers and sellers to base their judgment on the conditions of their own order books. There are times when it is not difficult for outsiders to judge the market with a fair degree of accuracy, but this is not one of them. All that can be safely said in regard to Pig Iron is that furnaces are well sold up, that there is a heavy demand and that sellers are not looking for additional business. A fair average of to-day's prices for Philadelphia and nearby deliveries would be about as follows:

No. 1 X Foundry.....	\$15.50 to \$15.75
No. 2 X Foundry.....	15.00 to 15.25
No. 2 Plain.....	14.50 to 14.75
Standard Gray Forge.....	14.00 to 14.25
Ordinary Gray Forge.....	13.25 to 13.50
Basic.....	13.75 to 14.00
Low Phosphorus.....	19.00 to 19.50
Malleable Iron.....	15.00 to 15.25

**Steel.**—The demand for Steel has been very active during the week, but mills are so well filled up with orders that they have to discriminate in quoting on new business. Prices are nominally \$22 to \$23, but higher figures would have to be paid to secure satisfactory deliveries.

**Plates.**—Quite a large business has been done during the week, and there is a great deal of inquiry for deliveries covering a long period. The advance in raw materials fore-shadows an advance in Finished products, consequently buyers are all trying to place orders for as large quantities as the mills are willing to enter. This being more or less speculative, manufacturers are using their discretion in regard to the amount they will accept, as present quotations are entirely out of line with raw materials. Prices are as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, rectangular Plates, 24 inches wide and under 1.43½		1.48½
Tank, Bridge and Boat Steel, over 24 inches wide.....	1.53½	1.58½
Flange or Boiler Steel.....	1.63½	1.68½
Marine, A. B. M. A. and Commercial Fire Box Steel.....	1.73½	1.78½
Still Bottom Steel.....	1.83½	1.88½
Locomotive Fire Box Steel.....	2.03½	2.08½

The above are base prices for ¼-inch and heavier. The following extras apply:

3-16 inch thick.....	\$0.10 per lb. extra.
Nos. 7 and 8 W. G.....	.15 "
No. 9 W. G.....	.25 "
Plates over 100 to 110 inches.....	.05 "
Plates over 110 to 115 inches.....	.10 "
Plates over 115 to 120 inches.....	.15 "
Plates over 120 to 125 inches.....	.25 "
Plates over 125 to 130 inches.....	.50 "
Plates over 130 inches.....	1.00 "

All sketches (excepting straight taper plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)..... .10 per lb. extra.  
Complete Circles..... .20 "  
All the above f.o.b. Philadelphia.

**Structural Material.**—The situation is closely in line with that defined in the preceding paragraph. Mills are getting a good deal of work and prospects are very encouraging. Prices unchanged, as follows—viz.: Beams, Channels and Angles, 1.53½c. to 1.65c., according to specifications, and small Angles, 1.50c. to 1.55c.

**Bars.**—The demand for Bars has been very active during the past few days, all classes of buyers having placed as large orders as mills were willing to accept. The expectation of higher prices is so strong that there is a general disposition to stock up; hence a somewhat unusual demand. Prices for the present are unchanged at 1.43½c. to 1.48½c. for either Iron or Steel, but some mills are not quoting on forward deliveries until they can see a little further ahead.

**Sheets.**—There is a heavy demand for forward deliveries, but sales are limited by the unwillingness of manufacturers to quote for next year's business. Prices are higher and carefully discriminated on, as it is difficult to accommodate all comers.

**Old Material.**—It is extremely difficult to quote exact prices, but those below are as near as can be given, representing bids and offers for deliveries in buyers' yards. Scrap is very scarce, however, and some holders refuse to consider proposals based on to-day's prices. Some business has been done, however, within the range of the following quotations:

No. 1 Steel Scrap.....	\$14.00 to \$14.50
Old Steel Axles.....	17.00 to 17.50
Old Iron Axles.....	19.75 to 20.50
Old Iron Rails.....	17.00 to 17.50
Old Car Wheels.....	13.50 to 14.00
Choice Scrap, R. R. No. 1 Wrought.....	16.00 to 16.50
Machinery Scrap.....	13.00 to 13.50
Low Phosphorus Scrap.....	17.50 to 18.00
Wrought Iron Pipe.....	12.25 to 12.75
No. 1 Forge Fire Scrap.....	11.00 to 11.50
No. 2 Forge Fire Scrap, Ordinary.....	9.50 to 10.00
Wrought Turnings.....	9.00 to 9.50
Wrought Turnings, Choice Heavy.....	10.00 to 10.50
Cast Borings.....	7.25 to 7.50
Stove Plates.....	10.50 to 10.75

## Pittsburgh.

PARK BUILDING, November 2, 1904.—(By Telegraph.)

**Pig Iron.**—The Pig Iron market continues in a somewhat excited condition, and all sorts of prices are being asked for Iron for shipment this year and into first quarter as well. Many of the furnaces that are pretty well sold up either decline to quote or else ask prohibitory prices. The absolute minimum on Bessemer and Basic Iron to-day for November and December shipment is \$13, Valley furnace, with some sellers asking \$13.25 to \$13.50. For first quarter of next year it is understood the Valley furnaces are asking \$14 at furnace for Bessemer and Basic Iron, but no sales have been made at this price. A small tonnage of both Bessemer and Basic has just been sold for first quarter at prices ranging from \$13 to \$13.50 at furnace. Northern No. 2 Foundry Iron has sold freely in the past week at \$13.50 up to \$13.75 at Valley furnace, and the market is to-day \$13.75 to \$14 at furnace, with some sellers refusing to shade the higher price. Northern Forge Iron has sold in the past week from \$12.25 up to \$12.50, at Valley furnace, most of the tonnage being placed at \$12.35 to \$12.40, at Valley furnace. Some sellers are quoting \$13, at furnace, equal to \$13.85, Pittsburgh; but no Northern Forge Iron has yet been sold at these high figures. A leading local Steel company has bought over 30,000 tons of Pig Iron, divided about equally between Bessemer and Basic, and another large Steel company has recently come in the market with inquiries for a large tonnage of Bessemer. The market to-day is certainly very strong, with every indication of still higher prices. The present shortage of Coke on account of scant water supply has much to do with the strength of the Pig Iron market.

**Steel.**—We can officially deny daily press reports to the effect that the Billet Association will meet in a few days and advance the price of Bessemer and Basic Billets \$2 a ton. No such action is contemplated for the present at least, but should Pig Iron continue to go up in price an advance in Billets may come later on. We quote Bessemer and Open Hearth Billets at \$19.50; Forging Billets, \$21.50; Long Sheet and Tin Bars, \$21.50, f.o.b. Pittsburgh, plus actual freight to point of delivery.

**Coke.**—We are advised that contracts for strictly Connellsville Furnace Coke have been made recently for delivery in the first half of next year at prices ranging from \$1.65 to \$1.85 a ton, and a Shenango Valley furnace is reported to have made a contract this week for Connellsville Furnace Coke, for shipment over the first six months of next year, at \$1.90 a ton, at oven. Coke is very scarce, many of the plants in the Connellsville region running very short handed on account of scarcity of water.



(By Mail.)

The past week has been a stirring one in the Pig Iron market, prices having still further advanced and reports going of sales of Iron at figures that can hardly be credited. A more radical change than that which has occurred in the Pig Iron market in the past three weeks would be hard to imagine. On October 1, or just a month ago, Bessemer Pig Iron was only moderately active, the price being fairly strong at \$12 at furnace, or \$12.85, Pittsburgh. There was no trouble to get Iron, but to-day conditions are entirely different. There seems to be an actual scarcity of Bessemer Iron, and furnaces having sold so heavily in the past month are very firm in their ideas as to prices. Bessemer Pig Iron and Basic as well are \$13 minimum at Valley furnace for this and next month shipment, while for first quarter both Bessemer and Basic have been sold at prices ranging from \$13 up to \$13.50 at furnace. No. 2 Foundry Iron on October 1 was about \$11.90 at Valley furnace, while to-day the minimum price is \$13.50 at furnace, and sales were made yesterday and to-day at \$13.75, Valley furnace. Northern Gray Forge Iron on October 1 was about \$11.75 to \$11.90 at furnace, but actual sales have been made in the past few days at \$12.40 at Valley furnace, or \$13.25, Pittsburgh, and it is doubtful if very much Forge could be had at this price. The above comparisons show an advance of about 75c. a ton on Forge Iron, at least \$1 a ton on Bessemer and about \$1.50 a ton on No. 2 Foundry. Reports are current of sales of both Bessemer and Foundry at prices considerably higher than noted above, but if such sales have been actually made they were probably emergency sales calling for prompt shipment, and in the present condition of the market Pig Iron for prompt shipment would bring almost any price the seller would care to ask. Now that the Pig Iron market seems to be going through a small sized "boom" and sellers asking higher prices almost every day, the question comes up whether the market is not moving too fast and whether present prices can be sustained. The key to the situation seems to lie in Finished Iron and Steel. While the demand for this is undoubtedly better on some lines, yet other lines, notably Tin Plate, are lagging a good deal. The demand for Plates, Iron and Steel Bars, Pipe and Sheets and also Scrap is very much better, but Structural Steel, Tin Plate and Merchant Steel are rather quiet. If we have a general improvement in volume of business in finished products, more especially on lines that are now quiet, it would seem that present prices of Pig Iron will not only be maintained, but may advance still further.

Reports are that inquiries for Billets and Sheet Bars are heavier than for some time, and that the mills are selling more tonnage and at full official prices. The small mills outside the Billet Association that roll a limited tonnage of Billets and Bars are now paying more money for Pig Iron and Scrap, and must of necessity sell their product at higher prices. It is very doubtful if any Billets or Bars could be bought to-day at less than the official prices of the Billet Association.

In finished products the item of interest this week is the announcement by the National Tube Company of another reduction of one point in discounts on Merchant Pipe, equal to an advance of \$2 a ton, and effective from November 1. This advance has also been made by the independent mills, and is the second advance of \$2 a ton in prices of Merchant Pipe made in the past two weeks. The demand for Sheets, Wire and Wire Nails is quite heavy and an early advance in prices of these products is expected by the trade. Tin Plate is quiet, but tonnage is slowly increasing, some large orders being entered by the leading mills, some for shipment through first quarter of next year.

There has been a heavy movement in Scrap in the past two weeks and, in sympathy with Pig Iron, prices are higher, Heavy Melting Scrap being held at \$13 minimum, with some sellers quoting \$13.50, f.o.b. Pittsburgh. One leading interest is credited with having sold 20,000 tons of Heavy Melting Stock within the past few days, and dealers who have stocks of Scrap on hand are disposed to hold them for higher prices.

The Coke producers are up against a very serious shortage in water supply, which is interfering materially with output of Coke. Demand for both Furnace and Foundry Coke is very active, and it is stated that strictly Connellsville Furnace Coke has sold in the past few days at \$1.85 a ton, at oven, for shipment through first six months of 1905, and also that 72-hour Connellsville Foundry Coke has sold at \$2.25 a ton for same delivery.

**Ferromanganese.**—In sympathy with other raw materials, prices on Ferromanganese are firm and higher. We quote foreign and domestic 80 per cent. Ferro at \$41 to \$41.50, delivered, for large lots.

**Wire Rods.**—While the demand for Wire Rods is only fairly heavy, prices are quite firm, and we quote Bessemer and Open Hearth Rods at \$26 to \$26.50, f.o.b. Pittsburgh.

**Skelp.**—A heavy demand, together with the second advance of \$2 a ton in Pipe in two weeks, and the fact that

the Skelp mills are pretty well filled up, all have had the natural effect of strengthening the prices on Skelp, which are very firm. We quote: Grooved Iron Skelp, 1.45c. to 1.50c.; Sheared Iron Skelp, 1.50c. to 1.55c.; Grooved Steel Skelp, 1.35c. to 1.40c., and Sheared, 1.40c. to 1.45c. All above prices are for ordinary widths and gauges, and are f.o.b. cars, maker's mill. We may note that some mills rolling Skelp are asking somewhat higher prices than the above.

**Steel Rails.**—Sales of Standard Sections are confined exclusively to small lots, and which aggregate only a fair tonnage. There has been a large movement in Light Rails in the past couple of weeks and prices are higher. Mills now quote \$20.50 up to \$24, depending on weight.

**Structural Material.**—In the past week the Michigan Central Railroad has placed orders for about 2000 tons of bridge work with American Bridge Company. Other smaller jobs have been placed, aggregating a fair tonnage, and two or three large contracts are about ready to close up. We quote: Beams and Channels, up to 15-inch, 1.40c.; over 15-inch, 1.50c.; Angles 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.40c.; Angles, 8 x 8 and 7 x 3½ inches, 1.50c.; Zees, 3-inch and larger, 1.40c.; Tees, 3-inch and larger, 1.45c. Under the Steel Bar Card, Angles, Channels and Tees under 3-inch are 1.40c., base, for Bessemer, and 1.45c., base, for Open Hearth, subject to half extras on the Standard Steel Bar Card.

**Plates.**—In the past month orders for nine large Ore boats have been placed, which will take upward of 50,000 tons of Plates and small shapes. Some fairly good sized orders have been placed for Steel cars and all the Plate mills at the Homestead Steel Works are running full, and both Plate mills of American Steel & Wire Company are on full this week. Other smaller Plate concerns report tonnage as picking up considerably. We quote: Tank Plate, ¼ inch thick, 6¼ to 24 inches wide, 1.30c., base; over 24 inches wide and up to 100 inches in width, 1.40c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Per pound extra.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges.....	\$0.10
Gauges No. 7 and No. 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell grade of Steel is abandoned.	

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum, and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast not included.

**Sheets.**—The demand for Sheets is quite active, the leading interest operating about 75 per cent. of its capacity, while the independent mills are running quite full and with a good deal of tonnage ahead. The Sheet trade is in better way than for some time, and talk is heard of an early advance in prices, but this has not been officially confirmed. We quote No. 26 Black Sheets, box annealed, one pass through cold rolls, at 1.95c.; No. 27, 2c.; No. 28, 2.10c., in carloads and larger lots. Galvanized Sheets are sold at 80 and 7½ per cent. off. We quote net prices of Galvanized Sheets as follows: Nos. 22 and 24, 2.59c.; Nos. 25 and 26, 2.77c.; No. 27, 2.96c., and No. 28, 3.15c. Jobbers charge the usual advance over these prices on small lots from store.

**Iron and Steel Bars.**—A good deal of tonnage is being placed for both Iron and Steel Bars, and specifications are coming in more rapidly than for months. The Bar mills are turning out more tonnage, and while prices on Steel Bars are unchanged, Iron Bars have gone up at least \$1 a ton, and are now held on the basis of 1.35c., Youngstown, equal to 1.39½c., Pittsburgh. There is no change in price of Steel Bars, but an early advance in these would not be surprising to the trade. We quote Bessemer Steel Bars at 1.30c., base; Open Hearth Bars at 1.35c., base, with the usual differentials for small lots. We quote Refined Iron Bars at 1.30c., f.o.b. Pittsburgh.

**Railroad Spikes.**—The demand for Railroad Spikes is improving and prices are firm. We quote Railroad Spikes at \$1.55 in carloads and \$1.60 in less than carloads per 100 lbs., f.o.b. Pittsburgh.

**Hoops and Bands.**—The demand for both Hoops and Bands is more active than for some time, and the tone of the market is firm. We quote Steel Bands at 1.30c., extras as per Steel card, and Steel Hoops at 1.55c., in carload lots, f.o.b. Pittsburgh.

**Tin Plate.**—A good many large contracts for Tin Plate for delivery into next year are in the market, but, as a rule, the mills are averse to taking contracts for extended delivery at present prices and guaranteeing these against decline. Some business has been placed, however, for delivery in the first quarter of next year at present prices. With the heavy advance in Pig Iron and a probable advance in Tin Bars, if the market holds up, there seems to be more probability of higher prices for Tin Plate rather than lower prices. We quote 100-lb. Cokes at \$3.25 net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days.

**Merchant Pipe.**—Under date of November 1 the National Tube Company and the leading independent mills announce a lowering of one point in discounts on Merchant Pipe, equal to an advance of \$2 a ton, a similar advance having been made on October 19. The reasons given for this second advance are the heavier demand for Pipe, higher prices for Skelp and the general advancing tendency of the whole market. The leading Pipe mills are pretty well filled up with tonnage for the next two months. We have reduced discounts one point in carloads to consumers and now quote as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
1/4 and 3/4 inch.....	69	53	67	51
3/4 and 1 1/2 inch.....	73	61	71	59
3/4 to 6 inches.....	77	67	75 1/2	65 1/2
7 to 12 inches.....	72	57	70 1/2	55
Extra strong, plain ends,				
1/4 to 3/4 inch.....	62	50	60	48
3/4 to 4 inches.....	69	57	67	55
4 1/4 to 8 inches.....	65	53	63	51
Double extra strong,				
plain ends, 3/4 to 8				
inches.....	58	47	56	45

**Merchant Steel.**—In sympathy with other lines, the volume of business in Merchant Steel is increasing and specifications on contracts are coming in quite satisfactorily. While prices are firmer, they are as yet no higher, and we quote: Tire Steel, 1.50c.; Sleigh Shoe, flat, 1.40c.; Cutter Shoes, tapered and bent, 1.90c. to 2c.; Open Hearth Spring Steel, 1.85 to 2c., depending on order. Crucible Tool Steel ranges from 5 1/2c. to 7c. for ordinary grades and 8c. to 15c. for best grades. Cold Rolled Shafting is firmer at 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered in base territory.

**Spelter.**—The market is firm, especially for spot shipment, and demand is also better. We quote prime grades of Western Spelter at 5.10 1/2c. to 5.13 1/2c., Pittsburgh.

**Coke.**—The long continued drought in the Connellsville Coke region is interfering seriously with the output of Coke, all the plants being short of water and sometimes compelled to shut down for a day or two at a time. This condition, coupled with the fact that furnace owners are very anxious to make contracts for Coke for next year's shipment, has had the effect of causing quite a stiff advance in prices of furnace Coke on contracts. The minimum price that any of the leading makers of strictly Connellsville Furnace Coke would consider to-day on contracts is \$1.75 a ton at oven, and we are advised of one or two contracts having been made at \$1.85 a ton at oven. If present high prices of Pig Iron are maintained and the region is not soon favored with some rain, \$2 Furnace Coke seems altogether probable. The absolute minimum price of 72-hour Foundry Coke is \$2 a ton, with some producers holding at \$2.25 a ton. The output of the Upper and Lower Connellsville regions last week was about 252,000 tons, a slight decrease over the previous week, owing to shortage of water. Makers of Main Line Furnace Coke have also advanced prices and now quote Furnace Coke at \$1.50 a ton and Foundry at \$1.65 and upward. The H. C. Frick Coke Company has been taking the surplus product of Furnace Coke of the Oliver & Snyder Coke Company for some months. The entire output of Brown & Cochran, who have a large number of ovens in the Connellsville region, is under contract for all of next year to W. P. Snyder & Co. of this city.

**Iron and Steel Scrap.**—Reports are that the Cambria Steel Company has sold 20,000 tons of Heavy Melting Scrap to two prominent dealers at \$13.50, f.o.b. cars, Johnstown. The Scrap made by Cambria is very choice in quality, consisting of Rail, Billet and Bloom ends and Beam and Plate shearings, and always commands at least 50c. a ton over ordinary Melting Scrap. Dealers report a fairly active demand and prices are quite firm. We quote: Heavy Melting Scrap, \$13.50; No. 1 Wrought Scrap, \$13; Wrought Iron Turnings, \$9.50 to \$9.75; Cast Iron Borings, \$7.50; No. 1 Busheling Scrap, \$10 to \$10.75; Bundled Sheet Scrap, \$10.75 to \$11; Rerolling Rails, long pieces, \$14; short pieces, \$13.50; Iron Car Axles, \$20.50 to \$21, and Steel Car Axles, \$17. All above prices are for gross tons except Wrought Scrap, which is net tons. We note a sale of 500 tons of Heavy Melting Scrap at \$13.50, Pittsburgh, and are also advised that a leading Open Hearth Steel plant has bought about 12,000 tons of Heavy Melting Scrap in the past two weeks.

The American Sheet & Tin Plate Company has opened a district sales office in the Union Trust Building, Detroit, Mich., with James A. Smith, Jr., in charge and Ralph Turner as his assistant. Mr. Smith was formerly district sales manager in Pittsburgh for the American Sheet Steel Company before its merger into the American Sheet & Tin Plate Company. Mr. Smith is favorably known to the Sheet trade and will no doubt be able to command a full share of the tonnage of the Detroit territory.

## Cincinnati.

FIFTH AND MAIN STS., November 2, 1904.—(By Telegraph.)

**Pig Iron.**—The market during the past week has shown additional strength daily and the situation to-day is one of unusual activity. Both Northern and Southern Irons have responded to the quickening influences that have been at work, and the effect has been an advance of \$1 per ton over last week's quotations. There is such a diversity of opinion as to just what the market price is that we find it difficult to definitely state the exact figure that can be denominated the ruling quotation. It is apparent, however, that \$12, Birmingham, represents the minimum figure for Southern No. 2, and that \$13.50 is as low as Northern No. 2 can be purchased at furnaces. Furnaces both North and South are still refusing to quote for deliveries or make any contracts involving considerable tonnage very far into next year, apparently reasoning that by holding what stock they have piled they will be able to secure even more remunerative prices as demand increases. That consumption is decidedly on the increase is conceded generally, while all reports go to show a considerable decrease of stock on hand at the furnaces. There is apparently a shortage of the softer grades, and concerns using these Irons almost exclusively are reported to be in anything but a pleasant situation. The buying during the week, as a whole, does not seem to have been done by the larger concerns, but was made up of numerous orders ranging from a carload to 1000 tons each. It is estimated that this movement in the States of Ohio, Indiana and Michigan alone aggregated about 25,000 tons, of which, perhaps, 95 per cent. was Northern Iron. The condition existing in the Coke regions is not one to inspire much confidence in Pig Iron producers, as Coke production must necessarily be curtailed if nature does not soon come to the rescue and furnish a more bountiful water supply. There are several fairly large inquiries in the field. A large electric company wants 7000 tons of analysis Iron for delivery throughout next year, and there is an inquiry from southern Michigan for about 12,000 tons for first half of next year delivery. The rolling mills and Pipe companies all over the country are beginning to feel the market and are expected soon to fall into line with the balance of the industries. During the week one large concern of Dayton, Ohio, bought 4000 tons of Northern for first half delivery, 6000 tons were sold to a central Ohio firm and 4200 tons went to a concern in northern Ohio. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$15.25 to \$15.50
Southern Coke, No. 2.....	14.75 to 15.00
Southern Coke, No. 3.....	14.25 to 14.50
Southern Coke, No. 4.....	13.75 to 14.00
Southern Coke, No. 1 Soft.....	15.25 to 15.50
Southern Coke, No. 2 Soft.....	14.75 to 15.00
Southern Coke, Gray Forge.....	13.75 to 14.00
Southern Coke, Mottled.....	13.50 to 13.75
Ohio Silvery, No. 1.....	17.15 to 17.65
Lake Superior Coke, No. 1.....	14.65 to 15.15
Lake Superior Coke, No. 2.....	14.15 to 14.65
Lake Superior Coke, No. 3.....	13.65 to 14.15

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$16.75 to \$17.00
Lake Superior Car Wheel and Malleable	16.50 to 16.75

**Coke.**—The market is very strong, the demand in some instances being in excess of the supply. There is some complaint of shortage of cars, which, taken in connection with the inability of securing miners in some districts and failure of water supply in others, makes the outlook anything but bright. Prices have advanced slightly, with all indications pointing still higher. We quote the best grades of Connellsville Coke from \$2.15 to \$2.35, f.o.b. ovens.

**Plates and Bars.**—Demand for the finished products is growing rapidly, and some concerns report that they are practically sold up for the year and can make no more contracts later. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.50c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.43c., with half extras; the same in smaller lots, 1.65c., with full extras; Base Angles, 1.53c., in carload lots; Beams and Channels, in carload lots, 1.53c.; Plates, 3/4-inch and heavier, 1.53c., in carload lots; in small lots, 1.80c.; Sheets, 16-gauge, in carload lots, 2.05c.; smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, 3/4 x 3-16 and heavier, 1.63c., in carload lots.

**Old Material.**—The reflex influence of the Iron market is shown in this class of Material. Sales have been active



during the week, and the general feeling is one of strength. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$10.50 to \$11.50 per net ton; No. 1 Cast Scrap, \$10 to \$10.50 per net ton; Iron Rails, \$14 to \$14.50 per gross ton; Steel Rails, rolling lengths, \$10 to \$11 per gross ton; Relaying Rails, \$18 to \$19 per gross ton; Iron Axles, \$14 to \$15 per net ton; Car Wheels, \$10 to \$10.50 per gross ton; Heavy Melting Scrap, \$9.50 to \$10.50 per gross ton; Low Phosphorus Scrap, \$11.50 to \$12 per gross ton.

Robert Field, William Wieman and C. J. Burton have organized the firm of Robert Field, sales agent, with office in the Traction Building, Cincinnati, and Murtland Building, Pittsburgh, and also agencies in St. Louis, Chicago and New York. This concern will handle the product of the Sloss Iron & Steel Company and the Lafalette Coal, Iron & Railway Company. Mr. Field, who was formerly the senior member of the Field-Evans Iron Company, will be in active control and manage the affairs of the new concern.

## Cleveland.

CLEVELAND, OHIO, November 1, 1904.

**Iron Ore.**—The movement of Ore down the lakes is still rather listless. The movement has been such all along as to leave little doubt that, even with the better demand for Ore which is now being seen, there will be enough to last through until the new supply begins to arrive next year.

**Pig Iron.**—There has been another spurt in all sorts of Pig Iron during the past week, and in consequence values are marked up here considerably. The sales of Foundry during the past week have been heavy, and a number of furnace companies, located in this vicinity, have announced their absolute withdrawal from the market for the present. The prices have risen considerably. Sales of No. 2 Foundry have been made at \$14 in the Valleys, and other transactions have been recorded as high as \$14.50 in the Valleys. One good lot went at that price, the purchaser being in need of the Iron at once. The generality of sales has probably been at \$14. There are some reports that a few furnaces are still selling at \$13.50, but they are by odds the exception. One little lot of No. 2 sold at \$15 in the Valleys, but that Iron was of higher grade than the standard No. 2, and for that reason this sale was not significant. Some of the furnaces, which are more completely sold up than their associates, are holding for \$15 in the Valleys, and expect to get it on first quarter delivery before the month is out. There has been some small buying of Bessemer Iron as high as \$14 in the Valleys. That price is now generally quoted by those who have anything to sell. The association has not sold any Iron, nor has it any contracts under consideration at the present time. The statement is made that the smaller furnaces are so well sold up that some of them are now holding for \$15 in the Valleys, having very little Iron to offer at that price. None of them is willing to make any big contracts for very far ahead, not accepting contracts for delivery for further ahead than the first quarter. It is known that some Basic has been sold as high as \$14 in the Valleys, while many of the furnaces are holding for \$14.50 in the Valleys. These furnaces are off the market for the time being, and are not anxious to sell at even that price, being of the opinion that the market will work higher. Some lots of Malleable have been sold as high as \$14.50 in the Valleys with very little material left for sale. The market has also been strengthened by the price which is now being charged for Foundry and Furnace Coke. The Foundry Coke quotations, put out the latter part of last week, of \$2.15 at the oven, have been withdrawn, and the market is now established at \$2.25 with some of the ovens demanding \$2.50 at the oven. This market has been stiffened by the understanding, generally prevalent, that the Frick people have taken over the Oliver output, or at least a large per cent. of it.

**Finished Iron and Steel.**—The market has grown strong during the past week upon the announcement that all of the larger mills are now refusing to accept contracts on standard materials for delivery after April 1. This announcement has been followed by the rejection of some big contracts which were to be placed for delivery up to July 1 next. One contract in particular ran pretty close to 20,000 tons. The best strength is perhaps in the Structural Steel and Plate trade. The American Shipbuilding Company has covered for 11 of its ships and has three ships under contract for which the material has not been bought. Each of these ships required upward of 3000 tons of material. In addition some of the outside buyers have also been coming into the market. Up until a week or ten days ago the buying of Shapes and Plates was confined to the shipbuilding concerns. Now the general market has taken to that sort of buying and orders have been covered running 1000 to 7000 and 8000 tons. The deliveries are, of course, confined to April 1, since the makers will not accept con-

tracts running past that date. There has been some good buying of Plates also and the market is stronger than it has been at any one time for months. In some cases some old contracts, which had seemingly gone by the board, are being revived and specified against, with the result that prices look to be better. The market is stiffer at least. The refusal of the makers to deliver after April 1 on the present price basis is based on the assumption that prices are going to improve. There has been good buying of Light Rails also. The prices have stiffened under the heavy buying. The market has been extremely active and now the supply is getting short. Prices have advanced \$1 a ton under cover of this better buying. There has been also some good buying of Standard Rails for traction properties. One order of 4000 tons has just been closed, and two other good propositions are immediately ahead which will require larger amounts. There have been reports that buying of Rails has been on a price guarantee, which is without foundation. The Bar situation has been stronger also. The price of Bar Iron has held at 1.35c., Youngstown, largely because the price of Scrap is higher, but the market for Bar Steel grew strong with the better demand which is being seen for the material. There have been sales of Bar Steel running 1000 to 6000 tons for delivery up to April 1. Some of the buyers up to ten days ago were able to buy through to July 1, but now the mills have shut off on sales for the remote delivery, restricting sales to the first quarter of next year. The prices have held strong at the old quotations of 1.30c., Pittsburgh, for Bessemer and the usual differential for Open Hearth.

**Old Material.**—There has been a stronger market for Scrap all through the week. The demand has been steadily on the increase, and sales to the local mills have been heavy. The material is not so plentiful as it was, helping the dealers in their efforts to boost prices. We revise and quote, all gross tons: Old Steel Rails, \$13; Old Car Wheels, \$12.50 to \$13; Heavy Melting Steel, \$12.50 to \$13. All net tons: Cast Borings, 6; No. 1 Busheling, \$12; No. 1 Railroad Wrought, \$13; Wrought Turnings, \$8.50; Iron Car Axles, \$17 to \$18; No. 1 Cast, \$11.50; Stove Plate, \$9.

## Birmingham.

BIRMINGHAM, ALA., October 30, 1904.

The strength of the Iron market as reported in last letter and telegram has been maintained, and with a tendency toward higher values. The sales have not been large for the reason previously stated. The stock of Iron available to meet fresh requirements is too slim to permit of sales of any moment. In fact, there is a scurrying around in some quarters to get the Iron to make deliveries on sales already made. One interest that started two of its furnaces in blast has been compelled to bank them, while there are others who have been compelled to postpone the day of their resumption. This leaves the harvest to be reaped by a comparative few, and these are not in condition to reap the full benefit of the situation. The buyers are still in the field and their orders are being turned down every day just from sheer inability to supply them. One very large and influential firm has a very respectable amount accumulated in its yards, but it is out of the market and says it will not enter it again until January. However, it is protecting its regular customers and feeding them enough to keep them going, but is declining outside business in the general market. Anything offering at current market rates is readily taken. The trouble is to find anything offering.

The 1000 tons of No. 3 Foundry reported last week as being on the market at \$10.50, net, was readily taken, several buyers being after it. More would have been taken if it could have been had. We are getting to a point now where there is a growing danger of a runaway market, a thing which the sellers dread more than do the buyers. It is easier to sell Iron under present conditions than it was when it was \$2 per ton lower. For delivery the first quarter of next year there is more or less demand, but it is discouraged. Very few sellers are in condition to take advantage of it, and those who are believe that higher values will prevail then and decline the offers. However, some sales have been made, one being for January, February and March equal deliveries at \$12.25, the lot carrying 2 to 2½ per cent. silica. There have been some sales made at \$12.50, deliveries running through the first quarter. But none of these sales has been of any magnitude, except the one above stated. For this year's delivery prices are very firm on the basis of \$12 for No. 2 Foundry. There were a few sales of Nos. 1 and 2 Foundry at \$12.50 and \$12, and some small sales of corresponding grades of Soft at the same prices. All grades are obtainable in only very limited quantities and at proportionate prices. The views entertained by the majority of the interests are very optimistic, and preparations are being made to put furnaces that have been awaiting a favorable opportunity in commission again. But the additions to present capacity will be very gradual and of slow growth. Both Coal and Coke are difficult to obtain

in liberal amounts, and there is a scarcity of certain labor essential to furnace working. It will be some time yet before we will attain normal conditions.

The strike condition remains unchanged. The operators still say that every day their ranks are being added to by accessions from the ranks of the miners' union and that they are making fair headway in the rehabilitation of affairs. The matter is in such shape that one side or the other must win out. The strike has cost the district hundreds of thousands of dollars, to the injury of both sides. Efforts have been made and inducements offered to the striking miners to go to other districts, but without very successful results. There are very few unlawful acts committed, but the feeling is rather acute.

The furnace at Battelle has improved in the amount of output as it gets warmed up and is now turning out about 230 tons per day, which it expects to increase.

The Gate City Rolling Mills resume operations this week after months of idleness, with a fair prospect for a continuous run for a good period. It is publicly stated now that the Steel plant at Gadsden will be enlarged to twice its present capacity and that the erection of a second blast furnace will soon commence. The plant when completed will have four blast furnaces, ten Open Hearth furnaces, a Rod and Steel Wire mill and their auxiliaries.

An important sale was concluded the past week of very valuable Coal property in the district by which over 4000 acres of Coal lands changed ownership. These lands carry what is known here as the Gamble mines, which have a high reputation for quality.

General business seems to be getting back to normal conditions and optimistic views are again prevailing.

## The New York Machinery Market.

NEW YORK, November 2, 1904.

The prevailing opinion in the street that the election next week will result in no change in national policies has stimulated business to some extent, and there is not that feeling of uncertainty present which often precedes a national election. Every one seems to be attending strictly to business, and giving very little thought to politics. Consequently there is no appreciable change in general conditions from those of last week.

One of the large propositions which the trade has been following closely is rapidly getting to the point where the machine tool builders will be able to capture some good orders. The project we refer to is the Canada Car Company, an affiliated company of the Pressed Steel Car Company, and which was only incorporated within the past few weeks. The plans for the new plant, which is to be located at St. Henri, near Montreal, Canada, have been completed, and a full description of the works appears in another column of this issue. There are to be 15 buildings in all, which will be equipped with the most modern car building machinery. Overhead cranes are to serve the shops, and the tools are to be driven by both electricity and compressed air. The entire matter is in the hands of W. P. Coleman, president and general manager, with offices at 529 Board of Trade Building, Montreal.

Quite an extensive list of tools for equipping its new plant at Lansing, Mich., has been issued by the R. E. Olds Company, which is now receiving bids on the various machines with the purpose of making early purchases. It will be remembered that the plant is to be of considerable proportions and to consist of a machine shop, 70 x 700 feet; three buildings, 60 x 100 feet, and two buildings, 70 x 500 feet each, besides an office building. The following is the list of machinery required:

**Engine Lathes.**—Six 10-inch x 4-foot speed lathes, ten 14-inch x 6-foot standard, ten 16-inch x 6-foot standard, one 16-inch tool room, taper attachment and draw in collets; two 18-inch tool room, taper attachment; eight 18-inch x 8-foot standard, three 24-inch x 10-foot standard.

**Turret Lathes.**—Twelve 16-inch x 6-foot three-step cone, friction head, hexagon turret on cross carriage without screw cutting attachment, tail stock, face plate, steady rest; eight 18-inch x 8-foot three-step cone, friction head, hexagon turret on cross carriage without screw cutting attachment, tail stock, face plate, steady rest; three 24 to 28 inch heavy, for cast iron; three Jones & Lamson; two screw machines, capacity 1½-inch hole in spindle, friction head, back gears, power feed on turret; one screw machine, capacity 1¾-inch hole in spindle; two screw machines, capacity 1½-inch hole in spindle, wire feed, double cut off, cross slide, no turret.

**Milling Machines.**—Six No. 4 plain, six No. 3 plain, six largest size hand, with chuck; two duplex, 30 inches between ends of spindles; two gear cutter, same capacity as No. 3 B. & S.

**Planers.**—One 24 x 24 inch x 6 foot, one 30 x 30 inch x 8 foot.

**Drill Presses.**—Twelve friction drills; ten 20-inch plain (extra power feed and back geared); ten 20-inch plain, with tapping attachment (extra power feed and back geared);

four 24-inch back geared; two small size radials; two 6-spindle, capacity 2-inch drills in steel, independent feed and spindle speed; four 6-spindle multiple drills, ¾-inch drills.

**Punch Presses.**—Two No. 4 open back, back geared.

**Grinders.**—One 16 x 2 inch wet; four 14 x 1½ inch dry; eight buffing spindles with 1¼-inch arbor between flanges; one universal tool room.

**Sharpeners.**—Two 20-inch.

**Miscellaneous.**—One bolt cutter, 1-inch capacity; six No. 3 arbor presses; two key seaters up to 1½ inches capacity; one oil separator; two pipe machines, small size up to 1½ inches; one arbor straightener; one small size case hardening furnace.

A quantity of chucks.

Specifications have been completed for the work of enlarging the Erie Canal, and the Department of Public Works, Albany, N. Y., will ask for proposals on six pieces of work within a few days.

The Exeter Machine Works, Pittston, Pa., informs us that it intends to go on at once with the extensive improvements to its plant, part of which was noted in these columns last week. Beside the additional machine shop, 100 x 250 feet, in which is to be installed an equipment of direct driven tools, there is to be an addition to the foundry, a new pattern house and a complete new power plant. The mechanical equipment of the power plant will consist of a 300-kw. generator for power purposes and 75-kw. generator for lighting purposes, together with 1000 horse-power of water tube boilers and other accessories. None of the equipment has been purchased.

A good part of the machinery for equipping the new additions to its plant has been purchased by the Standard Roller Bearing Company, Philadelphia, Pa., whose requirements in the mechanical line we printed some time ago. The company has thus far placed orders for about 20 Cleveland automatic screw machines, several automatic screw machines and a large number of grinding machines, with the Brown & Sharpe Mfg. Company, Providence, R. I., and some lathes with Manning, Maxwell & Moore, New York. About 50 other machines of various types have been secured from different makers.

Having decided to move its plant from Creighton to Avonmore, Pa., where it will have better facilities, the Timblin Engineering & Foundry Company will be in the market for considerable new equipment, including one 30-inch lathe, with 16-foot bed; one 16-inch lathe, with 10-foot bed; one universal milling machine, one 28-inch shaper, one 6-inch full universal radial drill, one large horizontal boring and milling machine, emery wheels and stands and some smaller tools. The company recently increased its capital stock to \$50,000, and has secured a 6-acre tract of land, upon which is a frame building, 70 x 209 feet, two stories high, with corrugated iron sides and roof. Into this building will be moved the equipment from the old shop, which embraces a 10-ton steam crane, 50 horse-power engine and 110 horse-power boiler. A siding connects the property with the Pennsylvania Railroad. The product is gas engines, steam engines and pumps, and brass and iron castings.

It will be remembered that the Niagara Falls Metal Stamping Works, Niagara Falls, N. Y., which succeeded to the business of the Metal Stamping Company, stated early in the summer that it would likely add some new machinery. We are now informed that the company will probably be in the market before January 1 for an 800-pound drop hammer, universal miller, screw machine for making studs and a powerful geared press for heavy blanking and forging.

The following is the machinery that the Tennessee Stove Works, 9 East Eighth street, Chattanooga, Tenn., is in the market for: Engine and generator, motors, motor grinders, exhaust tumbling mills, blowers, cupolas and a small band saw. Other material in connection with the building of its new plant is also required.

The management of the United Lead Company, New York, which already controls four white lead plants, has decided to enter into active competition with the National Lead Company in the white lead business. To this end the company will soon begin the erection of two white lead plants and will shortly ask for bids for the necessary machinery. Communications concerning the proposals for equipment should be addressed to the purchasing department, 71 Broadway. The two white lead plants are to be located at Perth Amboy, N. J., and Granite City, Ill., and will have a daily capacity of 100 tons and 200 tons, respectively. The company also expects to erect a castor oil mill at Granite City and will require the necessary machinery for that plant.

Dry pulverizers, blenders and breakers, color presses, &c., are required by the McLennan Paint Company, Buffalo, N. Y., to replace the machinery lost in the fire which recently visited its dry color plant, a building 84 x 120 feet, four stories high. The power plant was not injured. The company is preparing plans for rebuilding the color plant, but has not yet gotten around to the machinery end, the purchase of which will not be made, probably, for some weeks.

The Hooven-Owens-Rentschler Company, 39 Cortlandt street, New York, has received an order for a 250 horse-



power engine from the Stengel Veneer Works, Buffalo, N. Y., which is erecting a new factory.

The Isthmian Canal Commission, Washington, D. C., will soon call for bids for the following:

One long stroke riveting hammer with three sets of snaps for  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 inch rivets.

One smaller size riveting hammer with three sets of snaps,  $\frac{1}{2}$ ,  $\frac{3}{8}$ ,  $\frac{1}{4}$  and  $\frac{3}{16}$  inch rivets.

One air holder-on with snaps for  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 inch rivets.

One heavy air chipper with 12 chisels.

Spare parts for above tools for three months' running with lubricating oil.

One air drill No. 11 Keller drill.

Three 13-16 inch Hessler taper reamers.

Three 15-16 inch Hessler taper reamers.

Three 1-16 inch Hessler taper reamers.

Two 40-ton hydraulic jacks.

Two 15-ton ratchet jacks.

One 9 x 11-16 inch riveter.

One 9 x 15-16 inch Jumbo riveter.

For use in connection with the water works at Panama, as follows:

Nine diaphragm pumps and 18 diaphragms.

The following bids were opened October 25 for supplies for the Boston, Portsmouth, Newport and Narragansett Bay navy yards:

Bidder 3. Union Steam Pump Company, Battle Creek, Mich.

29. Drew Machinery Agency, Manchester, N. H.

46. George F. Blake Mfg. Company, New York.

48. Warren Steam Pump Company, Warren, Mass.

52. General Electric Company, Schenectady, N. Y.

56. The Manhattan Supply Company, New York.

63. Marshall T. Davidson, Brooklyn, N. Y.

78. Crocker-Wheeler Company, Ampere, N. J.

97. Fox Bros. & Co., New York.

114. The Fairbanks Company, New York.

125. Chicago Pneumatic Tool Company, New York.

129. Edward W. Irwin, New York.

Class 3. One  $1\frac{1}{2}$  horse-power electric motor—Bidder 52, \$129; 78, \$199.

Class 31. Ten No. 2 Little Giant pneumatic drills—Bidder 129, \$800 (?); 125, \$845; 97, \$967.50; 56, \$999.70.

Class 32. Two self rotating pneumatic hand rock drills—Bidder 129, \$199; 97, \$241; 125, \$250.

Class 36. Two portable bench grinders—Bidder 114, \$114.

Class 113. Thirty vertical single double acting feed pumps—Bidder 29, \$1590, \$1995, \$2265; 63, \$1635; 46, \$1650; 48, \$1701; 3, \$2025.

The bids opened August 9 for boilers, pumps and machinery for the new power plant at West Point, have been rejected, as the specifications called for all pressure parts to be of wrought steel and to meet 200 pounds pressure, which it was found did not permit of competition, as they restricted purchase of but one type of boiler. Bids will soon be asked for under revised specifications. The bids received were as follows: Aulman Taylor Company, Mansfield, Ohio, \$36,684; A. D. Granger, New York, \$35,879; Motley, Green & Co., New York, \$41,400; Heine Safety Water Tube Boiler Company, St. Louis, Mo., \$32,800; Abendroth & Root, New York, \$30,798; Babcock & Wilcox Company, New York (wrought steel), \$38,250, (cast steel), 160 pounds pressure, \$32,750; Stirling Company, Barberton, Ohio, \$30,600.

The Isthmian Canal Commission, Washington, D. C., has awarded the contracts to the Bucyrus Company, South Milwaukee, Wis., for 11 steam shovels for use on the Isthmus of Panama, at its bid of \$117,250. The contract for furnishing 200 flat cars at \$875 each was awarded to the Standard Steel Car Company, Pittsburgh, Pa. All other bids for cars have been rejected, the commission having decided that just as present no other cars will be needed.

The following additional awards have been made for supplies for the New York, League Island, Norfolk, Pensacola, Puget Sound and Washington navy yards, under bids opened September 27:

Manning, Maxwell & Moore, New York, class 4, one engine lathe, \$700; class 8, one double ended punching and shearing machine, \$1920; class 10, two steam warping winches, \$700.

Niles-Bement-Pond Company, New York, one double ended punching and shearing machine, \$4095.

The following awards have been made for supplies for the Boston, Portsmouth and Newport navy yards, bids for which were opened October 4:

Burke Electric Company, Erie, Pa., class 1, three electric motors, \$813.

Manning, Maxwell & Moore, New York, class 49, one pneumatic power molding machine, one pneumatic tripod sand screen and one pneumatic tripod sand screen with steel shield, \$476.

Geo. A. Obl, Newark, N. J., class 54, one squaring shears, \$1194.60.

Montgomery & Co., New York, tin folding machine,

grooving machine, machine punch, sheet iron folder, &c., \$169.30.

Westinghouse Machine Company, Pittsburgh, Pa., class 16, four mechanical stokers, \$5900.

## Iron and Industrial Stocks.

NEW YORK, November 2, 1904.

Nothing of a sensational nature has occurred during the week in iron and steel stocks. Prices have fluctuated to some extent with the course of the general stock market as influenced by reports of possible trouble between Great Britain and Russia. Transactions have been numerous and prices have been well sustained. Last transactions on active stocks up to 1.30 p.m. to-day were made at the following prices: Can preferred,  $47\frac{1}{2}$ ; Car & Foundry common  $25\frac{3}{4}$ , preferred  $82\frac{1}{2}$ ; Locomotive common 27, preferred  $97\frac{1}{2}$ ; Colorado Fuel  $43\frac{1}{8}$ ; Pressed Steel common  $30\frac{7}{8}$ , preferred  $80\frac{1}{2}$ ; Railway Spring common  $24\frac{1}{8}$ , preferred 85; Republic common 12, preferred  $53\frac{1}{2}$ ; Sloss-Sheffield common  $49\frac{1}{2}$ , preferred 97; Tennessee Coal, 58; United States Steel common  $20\frac{1}{2}$ , preferred 82, new 5's  $84\frac{1}{2}$ .

The Pittsburgh Reduction Company, Pittsburgh, manufacturer of pure aluminum, with works at New Kensington, Pa., and Niagara Falls, N. Y., has just declared a stock dividend of 100 per cent., payable November 3. It has been paying annually dividends of 12 per cent. in cash for some years. On October 20 it increased its capital stock from \$1,600,000 to \$3,800,000. Of the old capitalization \$600,000 was preferred stock, on which a dividend of 6 per cent. is paid, and which does not participate in the stock dividend.

Under date of November 1 Frederick H. Eaton, president of the American Car & Foundry Company, issues the following statement to stockholders. The net earnings from operation for the period ending August 31, 1904, were as follows:

Surplus, May 31, 1904.....	\$11,905,025.66
Net earnings for quarter ending August 31, 1904.....	\$587,768.68
Dividend No. 22 on the preferred stock, at the rate of 1% per cent.....	525,000.00

Surplus earnings for the quarter..... 62,768.67

Total surplus to date, not including September and October earnings.....\$11,967,794.33

**Dividends.**—The Pressed Steel Car Company has passed the dividend on the common stock, but declared the regular quarterly dividend of 1% per cent. on the preferred stock, payable November 23. The passing of the dividend on the common stock occasioned no surprise, as the recent financial statement of the company showed a heavy decrease of earnings. The company was organized early in 1899. In 1900 common dividends of 6 per cent. were paid; in 1901, 4 per cent.; in 1902, 4 per cent.; in 1903, 5 per cent., including 1 per cent. extra and in the first two quarters of this year 1 per cent. each.

The Fifth Sterling Steel Company has declared the regular quarterly dividend of 2 per cent.

The Manufacturers' Association of Pittsburgh held its first annual meeting last week and elected the following officers: William H. McFadden, Mackintosh-Hemphill Company, president; H. C. Shaw, A. Garrison Foundry Company, vice-president; Stewart Johnston, Pittsburgh Steel Foundry, treasurer; W. C. Scott, Thomas Carlin's Sons Company, and Edward Kneeland, Frank Kneeland Machine Company, councillors. The association is composed of manufacturers of Allegheny County, and has its headquarters in the Lewis Block, Pittsburgh. The officers' reports for the first year of the organization showed it to be in a very satisfactory condition financially and otherwise.

The efficiency of the Nernst lamp has formed the subject of experiments by L. R. Ingersoll, who made use of Angstrom's method. The experiments showed the glowers to be by no means uniform. New glowers showed an efficiency of from 4.33 to 4.7 per cent. During the first 20 hours the efficiency falls rapidly to about 4.3 per cent. After this the variation is slow. Tests of glowers of an age of 40 hours and upward gave a mean efficiency of 4.17 per cent, while some very old specimens gave only 3.6 per cent. It was noticed that after a glower had burned upward of 20 hours it developed a marked crystalline appearance, and it is probable that the fall in efficiency is due to the greater radiating surface, and consequently lower temperature, afforded by the crystalline structure.

\* Ex-dividend of 1% per cent.

## The Philadelphia Machinery Market.

PHILADELPHIA, PA., October 31, 1904.

There has been a much better feeling in the Philadelphia machinery market during the past month. While the amount of new business placed has not been large, it has been sufficient to bring about a much better tone, and it is the consensus of opinion among those in the trade that the market is shaping itself for better things. Some purchasers have discounted the result of the approaching election and have already placed orders, but this must not be taken to indicate any large amount of business to be placed, or any resumption of more active conditions at the various plants in the immediate future. The return of more prosperous conditions will in all probability be gradual, and it is not likely to reach any great volume of business during the remainder of the present year.

The winter months are not conducive to improvement and new building operations and only a small amount of such work is under consideration in this territory. Railroads still continue to hold back on their orders, even though the authority to purchase has been granted, and are taking on only such machinery and tools as are absolutely necessary. Buyers in many other fields have scarcely enough work to keep their own plants going to advantage, and therefore until things materially improve, are likely to be out of the market. In certain other cases it is known that purchases of various tools, although they may be badly needed, are for specific reasons being deferred until after the first of the year. On the whole, therefore, until all the various points of the market can be brought together, it is expected that the forward movement will be slow.

Inquiries have improved in nearly all lines, both in number and in general tone, and while it is likely that many have been made to base costs and future purchases on, it is also true that in many cases inquiries have led up to business much more promptly than for some time back. Manufacturers have taken on some new business, but not enough to in any way crowd their plants, except probably on the basis of their present actual capacity, with greatly reduced working forces and they on short time. Quite a few manufacturers have been working very close to the ragged edge, and the orders recently taken will enable them to continue in operation for some time to come. In certain lines the increased business is already being felt, but with most builders of engines and tools it will be some little time before the shop forces will obtain the benefit of recent orders. The amount of business on hand varies, some of the medium sized shops now having orders enough to keep their plants going under present working forces for three to four months. A number of the small shops have work enough in some of their special lines, which makes them quite busy, but the larger plants with the lately increased capacity are quiet. It will take a considerable amount of new business, however, to enable these plants to return to anything like the prosperous conditions of a year or two ago.

Foreign demand for machinery and tools shows no general improvement. Merchants conducting a regular trade abroad report orders as numerous as ever, but the quantity of goods taken is less than heretofore. Specialties, such as pneumatic tools and appliances, are in continued good demand, but the general line of tools and machinery is weak. Some talk as to orders for tools and machinery for the Orient is heard, and while it is practically certain that builders of tools in this territory have taken some of this business, nothing authentic can be learned. Conditions prevalent, however, both at home and abroad are not favorable to any extensive foreign trade at the time.

Deliveries on almost every class of machinery and tools can be made promptly. Manufacturers in most instances still have fairly large stocks on hand and can ship standard goods immediately from warehouses. While stocks on hand have been reduced to some extent, it will doubtless be some time before it is necessary to defer delivery until such tools can be made. Special tools, heavy engines and extremely heavy standard goods can be furnished in a minimum length of time, almost all plants being in shape to finish this class of work with dispatch.

Foundries, both iron and steel, have found conditions unchanged during the past month; both branches of the trade are equally dull and plants that are running up to

their capacity are few. In proportion to their tonnage the gray iron plants are probably the dullest, many running only a limited number of heats per week. With the machinery, building and jobbing trades inactive, little improvement is expected at this time.

An improvement has been reported in the general demand by machinery and machine tool merchants during the past month. There has been more inquiry and sales of single tools here and there to small consumers show an inclination of purchasers to get into the market. Some dealers have made a few large sales, which have helped materially in the month's total. Sales have not, it is said, been confined to any one line, but cover the general run of the smaller and medium sized tools. The dealers in the smaller engines, boilers, &c., report but little change in conditions. There has been a fair demand, but no business of any magnitude has been transacted. Machine shop supplies are a trifle more active, but without special feature.

Prices are on the whole unchanged; not enough buying has come out to make any change or even firmness. Weakness continues in some lines, the size of an order and the anxiety to capture the business governs the quotations in many instances. On some particular classes of tools, however, prices continue strictly unchanged.

Work has been started by the Philadelphia Rapid Transit Company on a new repair shop, office building and transfer table at Second street and Wyoming avenue. An addition, 70 x 84 feet, is also to be built to its car barn at Thirteenth and Jackson street.

The Philadelphia Rubber Works has awarded a contract to William Steele & Sons of this city for the erection of a new plant at Schuylkill avenue and Reed street. The present building, on the site, is a two-story structure, 120 x 150 feet. This will be remodeled and new buildings, comprising a one-story fire proof boiler house, 29 x 36 feet; one-story engine and pump house, 29 x 36 feet; three-story mill 60 x 116 feet, and a vulcanizing building, 49 x 68 feet, will be erected.

The Southwark Foundry & Machine Company has been entering considerable new business during the past six weeks. Inquiries have been better, and there is a tendency to close business more promptly. Orders for both engines and Weiss condensers have been booked, while some extensive engine orders are expected to be closed in the very near future. The drawing rooms and pattern shops are busy, but the new work has not yet reached the foundry and machine department, which are at the time not as busy as they might be.

The Philadelphia Roll & Machine Company is busy during the past month nearly 1,000,000 pounds of castings have been produced, most of which has been cast into sand and chilled iron rolls. The increase in the demand for finished rolls has kept their machine department working to its full capacity in order to finish this class of work. Orders for rolls have been coming along very freely and there is a good volume of work ahead. Deliveries have been made both of chilled and sand rolls to a number of the nearby steel and iron plants, as well as to some of those in the central and western part of the State.

The Eynon-Evans Mfg. Company has had a large increase of orders for pattern work and that department of their plant is quite busy. The new foundry addition has been completed, and the company is now able to handle considerable more work in that department. A number of orders for special acid resisting bronze castings are in hand, as well as castings for general work. There is a fair demand for condensers and blowers, but their machine shop could handle more business.

The Tabor Mfg. Company has taken on a considerable amount of new business, and all departments of its plant are very busy. There has been a large demand for molding machines from foundries located in Northern Pennsylvania, and orders for a number of machines have been booked from that territory. Foreign demand is good, several split pattern vibrator frame machines have been shipped to England, and a large, split pattern machine for automobile work has been exported to France. A large 12-inch jar ramming machine for heater work has been shipped Giblin & Co., Utica, N. Y.; a 38 x 66 split pattern vibrator machine has been delivered the Utica Heater Company, Utica, N. Y.; a jar ramming machine has also been furnished the American Locomotive Company, and a 20-inch power ramming machine for driving wheel centers has been delivered the Standard Steel Works, Burnham, Pa. The Tabor Company also reports a very good demand for Taylor-Newbold saws, a number of which have been delivered various parties.

I. H. Johnson, Jr., & Co., Incorporated, continue fairly busy. Inquiries are good and some very satisfactory orders have recently been taken, including, among others, that of the Seabury-Driggs Company for a large number of heavy lathes. Bids are out on considerable work and the prospect for future business is considered very favorable. A number of lathes have also been shipped various parties during the month. Most of these, however, were of the medium size and weight, and shipping points covered New England and



various shops in the Pittsburgh district and the Middle West.

H. B. Underwood & Co. report a continued good business. Inquiry for special railway shop tools has been good and a number of the railway companies have placed orders, including the Pennsylvania Railroad, which has ordered rotary planers, dome facing machines and boring bars for its various shops east of Pittsburgh. Local business in general machinery has improved. Several nice orders have recently been exported, including a portable cylinder boring bar and fixtures, for a shipyard in Manila, Philippine Islands. Three rotary planing machines and three portable crank pin turning machines were also exported for the Antofagasta and Bolivia Railroad Company, in South America.

The Philadelphia Pneumatic Tool Company has had a very satisfactory month. In order to keep up with the demand for its various tools it has been again necessary to increase the working hours of the plant, several departments of which are now running several nights a week. The foreign demand continues to hold its own; domestic orders, however, have increased, the Middle West and Northwest being the best fields. Orders have been received for a large number of drills, and the demand for rammers has been heavy, particularly for concrete work. Deliveries include shipment of hammers, riveters, drills and rammers to a number of parties in the Middle West, as well as to consumers all over the country.

Thomas H. Dallett & Co., Incorporated, have had an increased demand for pneumatic tools, particularly for those used in the stone industry. There has been, however, no marked improvement in the field of machine tools. Some foreign business has developed for stone surfacing machines, on which line of goods their plant is quite busy.

The Espen-Lucas Machine Works has taken on quite a lot of new business, the past month being the best they have had this year. Inquiries for cold saws and other tools have been quite good, and orders placed cover nearly all their line of tools. Two Western steel foundries have placed orders for complete equipments of foundry saws and automatic saw sharpening machines. Several I bar machines have been shipped to parties in the South, several to New York State, and two cold saw machines have been shipped to concerns in the Pittsburgh district.

The American Pulley Company notes no change of conditions; orders are being received in about the same number and for the same quantity of pulleys as for several months back. Foreign demand continues about as usual, while the domestic demand has improved some in New England and in the local territory. Shipments for export have been made recently to Amsterdam, Holland; Copenhagen, Denmark; Geneva, Switzerland, and Stockholm, Sweden. Australia has also taken a good number of pulleys. Carload deliveries have been made to New England and Middle Western points, while local and nearby parties have taken pulleys in varying quantity.

The Energy Elevator Company notes a better demand, particularly in the local field. The month on the whole has been slightly better than the previous one, and from the present complexion of inquiries a further improvement in business is anticipated. A power freight elevator has been installed in the factory of Chas. P. Cochran, this city, while a second lift has been furnished Salisbury, Md., parties. Lifts have also been installed in the German Hospital, the Home for Incurables, and a third lift—of its kind—was installed in the House of the Good Shepherd—all being in this city. Elevators have also been shipped to parties in Mobile, Ala.; Springfield, Mass.; Hartford, Kan.; Altemont, Ill.; Lexington, Tennessee, and other points.

The Baldwin Locomotive Works has taken several good orders during the past month, including, among others, one for 51 locomotives of both the freight and passenger types, for the San Pedro, Los Angeles & Salt Lake Railroad; another for 20 locomotives for the New York, New Haven & Hartford Railroad; besides which several orders for almost equally large numbers of engines have been received from other parties. The general outlook for the future is much better, and it is expected that considerable new business will be placed before the end of the year. In the shops work is quiet, the new business not having yet reached the operating departments. Recent deliveries of locomotives include the balance of 25 passenger and freight engines for the Southern Railroad, three for the Gulf & Ship Island Railroad, and a number for the New York, New Haven & Hartford Railroad, on a previous order. The last of 50 engines for the Atchison has also been delivered.

The Hub Machine & Tool Company has opened warehouses at 116 South Sixth street, Philadelphia, and will carry a full line of tools for immediate delivery. It will also do repair work promptly, the equipment being in all respects first class. B. F. Lare is manager, and William Teitgen, treasurer.

**Duquesne Blast Furnace Record.**—All previous records for pig iron production were broken in October at the four Duquesne furnaces of the Carnegie Steel Com-

pany, Duquesne, Pa.; they turned out 74,606 tons. The best daily record for one furnace was on October 27, when it turned out 793 gross tons, and the best daily record for the four furnaces was on the same date, when 2700 gross tons were turned out. The best weekly record for one furnace was 5001 gross tons, and for the four furnaces 17,783 tons. The best monthly tonnage for one furnace was 20,659 tons. The best previous record for the four furnaces was in January, 1902, when they turned out 74,189 tons. No. 1 furnace of this group ran on one lining for seven years, or from 1896 to 1903, and in those seven years turned out 1,287,381 gross tons. The total production on one lining for the four furnaces is 1,469,855 gross tons. The total charge in the four furnaces during October of all kinds of fuel was 236,501 tons, the total material used in one day was 7630 tons, and for each minute of the month about 5 tons. The stock is hoisted 135 feet to the top of the furnace. The coke consumption was equal to about 1 ton per ton of iron made. Of these furnaces Nos. 1 and 3 are each 100 x 22 feet in size, and Nos. 2 and 4 each 100 x 23 feet in size. The furnaces are equipped with 16 Kennedy-Cowper stoves, each 97 x 21 feet in size.

### An International Rail Pool.

For some time past rumors have been in circulation regarding negotiations between the rail makers of Great Britain, Germany, Belgium and France, the object being to arrive at an understanding as to export orders and to prevent the ruinous cutting of prices that has hitherto taken place in this industry. Some months ago an understanding was nearly reached but broke down over a dispute as to the allotments. We learn on the best authority that, as a result of a meeting held in London last week, an agreement has now been arrived at. At this conference an arrangement was provisionally entered into by the various delegates on behalf of the countries which they represented, and the agreement now only wants the ratification of the group of works in each country to come into operation for a period of three years. In Great Britain this ratification appears to be only a matter of form, and no hitch is to be expected. The German Stahlwerks Verband, the Belgian Steel Works Union and the individual French Steel works are practically agreed on the desirability of the arrangement, although in these cases the final approval of the constituents is necessary.

The agreement is based upon export sales amounting to 1,300,000 tons per annum, and the allotment to each country is as follows, taking a figure of 100 as the unit:

	Participation per 100.
British works.....	53.50
German works.....	28.83
Belgian works.....	17.67
Total.....	100.00
French works—First year.....	4.8 parts out of 104.8 parts.
Second year.....	5.8 parts out of 105.8 parts.
Third year.....	6.4 parts out of 106.4 parts.

It will be observed that while the British, German and Belgian allotments are expressed in a unit of 100, the French works have their allotment added to this figure of 100, making the actual unit for the first year 104.8, rising to 106.4 at the end of the third year.

We understand that at the London meeting the British allotment was finally fixed, but it was left to the Belgians and Germans to arrange among themselves their respective proportions, with the result as shown above. The arrangement seems a very fair one to all parties. The British proportion is, of course, very much less than would have been obtained had the arrangement come into force in, say, 1899. The immense increase of German exports in the last five years has entitled that country to a much larger share.—*The Iron and Coal Trades Review, London.*

The Springfield Heating & Ventilating Company, Springfield, Ohio, has been incorporated with \$10,000 capital by J. A. Humphreys, Llewellyn Scott, E. G. Herbert and R. L. Thompson. The company will handle hot air furnaces and will manufacture a natural gas burner and attachment, the invention of R. L. Thompson.

## New York.

NEW YORK, November 2, 1904.

**Pig Iron.**—Among the transactions of the week were a 5000-ton lot of Foundry Iron to a consumer in western New York, 5000 tons to New England, 3000 tons of Basic to New England, and 1000 tons of Foundry also to New England. Those who have not sold much Iron have not lost sales because they had no opportunity, but for the reason that furnace companies were not willing to take more business. The demand has been exceedingly heavy. Not much Iron has been sold thus far for next year's delivery, and, therefore, those who are now buying are as a matter of course expected to be active in the market either before the close of the year or shortly after the new year opens. Higher prices are named by all producers. Some of the eastern Pennsylvania makers are asking \$15, at furnace, for No. 2 X Foundry and say they can easily get it. Quotations are as follows: No. 1 Northern Foundry, \$15.50 to \$16; No. 2 X Foundry, \$15.25 to \$15.70; Gray Forge, \$13.50 to \$14, tidewater. Tennessee and Alabama brands are quoted at \$15.75 to \$16 for No. 2 Foundry, and \$15.25 to \$15.75 for No. 3 Foundry.

**Steel Rails.**—The Louisville & Nashville Railroad Company has purchased 50,000 tons of Standard Sections from the Tennessee Coal, Iron & Railroad Company for delivery next year. This is the first transaction for next year's delivery which thus far has come to light. The Tennessee Company is not a member of the Retail Association, but is acting in harmony with it. Numerous orders for small lots are being received by the mills in the association. The price of Standard Sections is unchanged at \$28, at mill, but Light Sections are stronger under a heavier demand and are now quoted at \$20 to \$20.50, at mill.

**Cast Iron Pipe.**—The City of New York will to-day open bids on 2800 net tons of Cast Iron Water Pipe, a part of which is for Brooklyn and part for New York. This is the only new business of any size which is now in immediate sight. A very good trade is reported in small lots considering the time of the year. Some buyers are feeling the market for next year. This is unusually early, but the strength of the Pig Iron market is evidently influencing them to make some preparation for the future and anticipate advances in price. Carload lots are quoted at \$25 to \$25.50 per gross ton for 6 to 10 inch and \$24 to \$25 for 12-inch, at tidewater.

**Finished Iron and Steel.**—While the demand for Structural Material is increasing in a general way, no improvement of importance has thus far been seen in the demand for bridges. Everybody, however, is talking more hopefully, and inquiries are increasing. The bridge business will probably be among the last to feel the rebound from inactivity, as it was among the first to feel the depression. The sales of the leading interest for October amounted to about half those of a normal month. Plates are in a very much better condition. Some sellers report a greater tonnage of orders placed in the past two weeks than the aggregate for several months. Inquiries are larger, and the outlook is exceedingly satisfactory. The mills, however, can still make quite prompt deliveries. The Bar Iron manufacturers are also talking much more cheerfully, their business having decidedly improved. Quotations, at tidewater, are as follows: Beams, Channels, Angles and Zees, 1.54½c. to 1.80c.; Tees, 1.59½c. to 1.80c.; Bulb Angles and Deck Beams, 1.64½c. to 1.85c.; Sheared Plates, in carload lots, 1.54½c. to 1.65c. for Tank, 1.64½c. to 1.80c. for Flange, 1.74½c. to 1.90c. for Marine, and 1.74½c. to 2.50c. for Fire Box, according to specifications; Refined Bar Iron, 1.44½c. to 1.49½c.; Soft Steel Bars, 1.44½c. to 1.49½c.

**Old Material.**—Quite a heavy buying movement is in progress. Among the transactions of the week were one lot of 2000 tons of Steel Melting Scrap and 1000 tons of Re-rolling Steel Rails. The demand for Re-rolling Steel Rails is particularly heavy. A leading railroad company having a large quantity of such Rails on hand is now asking \$15 on its road. The condition of trade is such that a dealer who is usually very conservative gives it as his opinion that the country is on the eve of a bigger boom than has ever been seen in the Iron business. Prices per gross ton in New York and vicinity are approximately as follows:

Old Iron Rails.....	\$17.00 to \$18.00
Old Steel Rails, re-rolling lengths.....	13.00 to 13.50
Old Steel Rails, short pieces.....	12.00 to 12.50
Relaying Rails.....	17.00 to 18.00
Old Car Wheels.....	12.00 to 12.50
Old Iron Car Axles.....	17.50 to 18.50
Old Steel Car Axles.....	15.00 to 15.50
Heavy Melting Steel Scrap.....	12.00 to 12.50
No. 1 Railroad Wrought Scrap.....	13.50 to 14.00
Iron Track Scrap.....	12.00 to 12.50
Wrought Pipe.....	9.50 to 10.00
Ordinary Light Iron.....	7.50 to 8.50
Cast Borings.....	5.50 to 6.00
Wrought Turnings.....	8.00 to 8.25
No. 1 Machinery Cast.....	11.50 to 12.00
Stove Plate.....	9.00 to 9.50

The Scully Steel & Iron Company, Chicago, has established an office at 120 and 122 Liberty street, New York, for

the convenience of its Eastern trade. The branch is under the management of H. S. Cory.

## Metal Market.

NEW YORK, November 2, 1904.

**Pig Tin.**—The market has been somewhat variable during the week, although at the close there was a firmer tone, with a fair amount of business in progress. At this writing local prices are quoted as follows: Spot, 29c. to 29.70½c.; November, 28.92½c. to 29.12½c., and December, 28.75c. to 29c. The closing London prices were: Spot, £132 2s. 6d., and futures, £131 12s. 6d., being an advance in the spot price of 12 shillings 6 pence on the week. The arrivals at Atlantic ports during the month just closed amounted to 2925 tons, and the total visible supply October 31 was 3321 tons below that shown on October 31 of last year.

**Copper.**—There has been a very firm market during the past week, although the amount of local business transacted has not been especially notable. Holders are showing greater confidence, and prices have developed an advancing tendency both here and abroad. It is estimated that there are a number of important buyers who have not yet covered their requirements for the early months of next year, among them being some large makers of electrical equipment. At the end of the week quotations are appreciably higher, due in large measure to the active export demand. The market closed strong at the following figures: Lake, 13½c. to 14c.; Electrolytic, 13½c. to 137½c.; Casting, 13½c. to 13½c. The latest London cables quote spot, £62 10s., an advance of £1 12s. 6d., and futures, £62 17s. 6d. Best Selected is quoted at £66 5s., an advance as compared with last week of £2 to the ton. Exports for the month have been, with one exception, the largest for the year, aggregating 26,335 tons, thus exceeding even the heavy outgo of August and March. In October of last year the exports were 12,515 tons.

**Pig Lead.**—There continues to be a good demand and prices are firmly maintained at 4.40c. to 4.45c. for spot. St. Louis telegraphs 4.20c. for spot, with the market firm and a fair demand. The London market is slightly above the figures of last week, being quoted at £12 12s. 6d.

**Spelter.**—The market is firm with a moderate demand, with spot quoted at 5.35c. to 5.40c. The St. Louis market is slightly easier than last week, being quoted at 5.15c. London cables £23 15s., which is an advance over last week of 5 shillings.

**Antimony.**—A firm tone prevails, but the business is largely of a routine character. Prices have varied somewhat from last week, current figures being Cookson's, 7.25c. to 7.50c.; Hallett's, 7.25c. to 7.50c., and other grades, 6.75c. to 7.25c.

**Nickel.**—The usual amount of business is passing and prices are nominally quoted for large lots at 40c. to 45c. and smaller quantities at 50c. to 60c.

**Quicksilver.**—The market remains the same as last week, flasks of 76½ lbs. being quoted at \$40. London is unchanged at £7 15s.

**Tin Plate.**—The market is firmer, with a better inquiry for next year's shipments. A fair volume of business has been transacted, considering the season of the year, and prices hold about as last quoted, the American Sheet & Tin Plate Company naming \$3.30 a box for 14 x 20 in 100-lb. boxes at mill. The Welsh market has shown a slight advance and is firm at 12 shillings, f.o.b. Swansea, as compared with 11 shillings 9 pence last week.

"Wood turpentine," a somewhat inferior quality of spirits of turpentine, is now being manufactured in the Southern States by a new process from pine knots, roots, &c., which sources of supply have hitherto been allowed to go to waste in abandoned pine lands. The new industry is as yet only in the experimental stage, and is being watched with interest by dealers in naval stores, who hope that an article produced in this way may be made useful in the industrial arts, where cheaper grades are usable and where it is not necessary to use the high standard qualities of spirits of turpentine, which can be obtained only by distilling the pure gum of the pine tree.

The world's supply of carborundum is dependent upon the operation of three plants only, that of the inventor, Acheson, being the best known and probably the largest. At the Acheson works, at Niagara Falls, there are in use 12 furnaces, each requiring, when in full operation, 1000 horse-power. The furnaces are about 30 feet in length. They consist of a core of carbon rods, laid zigzag, with cross blocks bridging the angles of the zigzags, round which is packed the charge of coke and sand and the flux of salt, the whole being supported by a brick box. A temperature of about 6000 degrees F. is maintained for 30 hours, after which the product is allowed to cool, and is then removed.



# HARDWARE.

THERE are evidences of activity in many directions in connection with Hardware associations. Those in charge of the interests of several of the State organizations are making efforts to increase the usefulness of the associations, and some of them have begun preparations for the annual meetings which will be held the coming year. The great event in the near future is the holding of the two great conventions the middle of this month at Atlantic City. It is evident that there will be a large attendance at both conventions, as the jobbers and the manufacturers will undoubtedly turn out in full force. It is said, indeed, that the indications point to a record breaking attendance. Fortunately, although both the hotels which are to be the headquarters of the associations have already disposed of their accommodations, there are a number of other hostelrys which will serve admirably for the housing of the overflow. In addition to the fact that the attendance will be large, and in good part explaining it, the sessions of both of these organizations promise to be of exceptional interest. Each of them has matters directly connected with its own interests which will be considered in executive session; but besides these matters, which are, after all, of very considerable importance, the two great subjects of catalogue house competition and special brands will command attention. The consideration of what is to be done in regard to the interference of catalogue business with regular Hardware interests is under the special care of the National Hardware Association, while the manufacturers are to be credited with bringing up and making prominent the question as to the policy to be pursued in regard to special brands. Both of these subjects are of recognized importance and difficulty and will demand in their consideration the best thought of both manufacturers and jobbers. In order to avoid unwise action it is necessary that they should be regarded broadly and with something of a judicial spirit. Narrow views and impulsive action should be avoided. We bespeak in the consideration of these questions an earnest endeavor to look at them in all their bearings, each great department of the trade regarding not only its own, but also the interests of the others. If this spirit prevails something may be accomplished in the way of correcting the abuses connected with special brands as they are at present used in the trade, and of limiting to a greater or less extent the disturbance and encroachment of the catalogue houses. The spirit of fraternity, which has so much to do with these great trade gatherings, will certainly be promoted by frankness and fairness in the discussion, as it may be jeopardized by their absence. If this temper characterizes the consideration given to these matters the result, whatever it may be, will certainly in more than one way be to the advantage of the trade.

In this age of small margins of profit the business man needs every protection against customers who cannot or will not pay their bills. A few losses will wipe out the profits of a considerable number of substantial accounts. Consequently the credit department is becoming a more important one each succeeding year. The larger customers may be watched through the commercial agencies, travelers' reports, &c., generally with complete assurance; but small buyers are harder to keep track of, and they have a large part in the business of many establishments. This is especially the case in retail trade, where the ex-

tent to which credit is given makes this matter one of serious importance. The blacklist has been resorted to for some time, but of late it has come into more general use, having extended the field of its usefulness from the minor retail trade into larger commercial interests. There are companies and firms that will not or, at any rate, do not use this form of protection, but notwithstanding the repugnance felt toward it, it has come more and more into use and is increasingly recognized as a legitimate manner of safeguarding against poor credits. As a matter of fact it is in principle not widely different from the methods of the old line commercial agencies, which may designate in one way or another individuals or firms as not entitled to credit if the facts justify such rating. The legal aspect of this method of protecting business has sometimes been questioned in the courts, but it is a matter of interest to note that in Connecticut the Supreme Court, the final court of appeal of the State, has quite recently decided that associations of business men may keep lists of delinquent debtors for their confidential use, and that there is nothing libelous or otherwise improper or unlawful in such practice.

## Condition of Trade.

Trade developments are increasingly pointing toward bettered commercial conditions, there being an undeniable drift generally in the different sections of the country toward a better feeling and a growing volume of business, both in raw material and manufactured products. While there are as yet no marked changes in prices, there is a perceptible hardening in various lines and some withdrawals of current quotations on goods which were demoralized in price. The remarkably fine fall weather and comparative freedom from early and killing frosts have favorably affected the abundant harvests and facilitated the marketing of farm and garden products at exceedingly satisfactory prices, from the point of view of the agriculturist. These conditions will naturally stimulate the remainder of the year's business, and lay a substantial foundation for trade next spring. The great and growing Northwest is absorbing an immense quantity of manufactured material, while the East, West and South are likewise taking their quota of the total. Such merchants as have kept themselves adequately stocked through the season are now in the enviable position of being able to supply the wants of their customers promptly, while some who were fearful of what a campaign year might develop are calling upon manufacturers for goods that they are not in all cases prepared to deliver. Much of the building started in the spring is now being completed, absorbing Building Hardware and other Trim. The exportation of manufactured articles progresses favorably and along broad lines.

### Chicago.

Optimism characterizes the Hardware market just at present, and the tendency is toward higher prices as a consequence of a constantly increasing volume of business. No price advances of any consequence have been announced thus far, and it is quite likely that December 1 or January 1 will be selected by manufacturers for such announcement of price changes as they may undertake to make. While the political factor is almost eliminated from the business situation, yet the decision as to the Presidency and the complexion of Congress and State legislatures is so near at hand that the present sentiment is to wait until the outcome of the political campaign is fully decided. Business on Wire products in general is excellent, with Nails in the lead as far as activity is concerned.

Buyers of Poultry Netting are not particularly energetic about covering their requirements at the prices just announced, feeling that even though Wire and Nails do advance, Poultry Netting may remain stationary. The efforts of the manufacturers of Barn Door Hangers and similar lines to agree upon some basis that would prevent the ruinous price cutting of the last few months have been futile, and the war is being waged more bitterly than ever. The new list on Axe and Hatchet Handles promulgated three weeks ago is not being adhered to by all manufacturers. In fact, the majority of makers of Handles continue to sell on the old list and discount. This is not a matter of vital importance, as the two lists do not vary materially, the new list and discount tending toward higher prices on the high class materials and slightly lower on the cheaper goods. The jobbing trade and the manufacturing trade as well have been surprised at the volume of business booked for Snow Shovels this early in the season. The demand manifested itself almost two months ahead of the usual schedule and has kept up ever since, the result being that country dealers' stocks of Snow Shovels are already pretty well filled up. Of course as soon as snow begins to fall over any considerable areas there will be urgent telegraphic demands for immediate shipment from jobbers' store from belated buyers. The demand for Furnace Scoops, Pipe, Elbows and kindred lines is exceptional, and jobbers are compelled to reorder in large quantities from the makers. Trade in Skates and Sleds is good, and holiday business begins to make itself felt, although the actual buying of holiday goods is not expected until after the election. The recent advances on the price of Axes has not materially curtailed orders from country retailers and consumers. Another advance is scheduled for January 1, which figure, according to the present programme, is to be maintained until April 1, at which time prices are to be dropped to the lower figure, and the low figure is to be gradually advanced up to the maximum the following spring. In other words, the Axe makers are following the programme of the anthracite coal producers, making a sliding scale of prices to encourage early buying. Business in Lanterns and Oil Stoves is stated to be much better than that of a year ago. The demand for Corn Husking Tools and Gloves bids fair to break all previous records, and both manufacturers and jobbers are taxed to their utmost to keep pace with this demand. Some business is beginning to develop on Lawn Mowers for next spring, but as a general thing spring orders are a little slower in developing than is usual at this time of year. It is expected, however, that as soon as the election is over this delayed business will be received in satisfactory volume.

#### Cleveland.

**THE W. BINGHAM COMPANY.**—We are having a very fine trade at the present time. Business is coming to us in large volume, both through our salesmen and through our mail order department. An immense tonnage of goods is going forward by lake to Northwestern points, and a large amount is going forward by rail to the East, West and South. There is one thing that merchants should realize now—which is, that they must keep their stocks better assorted than they have in the past. There is an active demand for all kinds of Shelf and Heavy Hardware and Mine and Mill Supplies. Immense quantities of Shovels and Scoops have been sold this fall. Scoops in particular on account of the large crop of wheat and corn. Early in the season we advised our customers that there would undoubtedly be a big demand for these goods in the fall, urging them to buy freely. Some did and now have the goods to retail, and others who did not are waiting for the goods, as the manufacturers are not prepared for the rush orders. We are, however, catching up on our back orders.

At the present time a large amount of fall goods of all kinds is going forward to our customers. A large quantity of Steel and Iron Merchant Pipe and Malleable Cast and Brass Fittings is being consumed all over the country, and there has been a very large trade in these lately. Travelers are sending in a good many well assorted orders for holiday Cutlery and Plated Ware. Many dozen

Axes and Scythes have gone forward of late, on account of the low prices that jobbers were able to make to the trade from their stocks on hand. The jobbers are willing to divide their profits with the retailers, and those who have bought will reap the benefit during the coming season when these goods are wanted for use.

A great deal of building has been done this summer, and at this time of the year contractors are closing up their jobs and now require trimmings to complete same. If merchants would take it upon themselves to go over their stocks more frequently, keep them better assorted and buy more goods of a kind, they would enjoy much better trade and there would not be so much talk about what catalogue houses are doing, for that is the secret of the catalogue house business. They always have the goods on hand when the people want them. Why don't the merchants do the same?

An immense tonnage of Nails and Wire has gone forward in the last 60 days. In fact, the tonnage sold is larger than it has been for a number of years at this time, and this tonnage goes direct to the retail dealers or distributors. It means simply that there is plenty of money in the country and people are prosperous and happy.

#### Louisville.

**BELKNAP HARDWARE & MFG. COMPANY.**—The market shows unmistakable signs of activity. Buying this week has been on a liberal scale for the rest of this year and well into the first quarter of next.

When the New York stock market exhibits violent seismic disturbances, as have been in evidence there for the past week or two, we know that something is in store for the steel and iron market. Whether the gentlemen who operate in stocks see this ahead and know that it is coming, or whether it is made to come by those in authority in order not to disappoint the operators, is something unsolved to the outsider. At any rate, we feel pretty confident that the gentlemen in the neighborhood of Wall street get their "rake off" coming or going, or in both directions, while "Jones pays the freight."

There is undoubtedly a large consuming demand all the country over, and the country people are spending liberally for their wants. One luxury in this part of the country, however, is not so readily provided as other goods on the bargain table—namely, rain. A cloudy day has been as great a rarity here as in the white spot on the hydrographic maps of Arizona or Southern California. The smaller streams are all dry and the Ohio River is making a record for itself. More and more of the bottom pokes up through the shallows every day. Meanwhile the sun shines brightly on, encouraging all sorts of outdoor work.

In certain parts of this drought stricken territory the people admit that enough water for free ablution is out of the question, drinking water for themselves and their cattle being all they can at present afford. The shortage in the last meteorological year—namely, from March 1 to March 1—was about 15 inches, out of about 40 average. This year so far, eight months, shows about 10 inches shortage on top of that. It has been ideal weather for cotton picking all through the South, and the consequence is that the estimate of the total crop is larger by 1,000,000 to 2,000,000 bales than was at first estimated.

#### Nashville.

**GRAY & DUDLEY HARDWARE COMPANY.**—The long continued drouth and warm weather has been very propitious for gathering crops in the Southern country and will aid very materially in increasing the volume of the cotton crop. The agricultural classes have been as busy as bees, and as they have had almost summer weather up to the present time they have not bothered their heads about buying any fall or winter goods. This has had a tendency to give the general store merchant the "blues," and as the dry weather which has prevailed has made the ground so dry and hard that fall plowing has been almost discontinued, it has to some extent affected the retail Hardware dealer. We cannot report that trade is as good as it was this time last year, but we confidently believe that with the breaking up of the drought and after the



marketing of the cotton crop, which is rapidly being put on the market, we will have the pleasure of supplying a most excellent demand for goods.

The recent advance on pig iron of \$1.50 or \$2 per ton in the Birmingham district has stimulated the demand for certain heavy goods, and we are just advised to-day of an advance of \$1 per ton on bar iron, which will have a tendency to convince the Hardware buyers that the market has taken an upward turn.

The farmers and country merchants are nearer out of debt than they have been for many years. Jobbers' collections are excellent. The approaching election is attracting no attention. From the best information we can get the approaching convention of the National Hardware Association will be well attended by Southern jobbers.

#### Baltimore.

**CARLIN & FULTON.**—The month which has just ended has, as far as we can learn, been one of satisfactory business generally. In regard to the present month but few days will elapse before the election, and the situation as we see it is in decided contrast to the excitement of former years, when business was almost paralyzed pending the decision of the people as to change of Administration.

It seems to be the general opinion from the manufacturers' standpoint that the market for manufactured goods will show in a very few days a hardening tendency, which is already foreshadowed by a firmer market for raw material.

We do not look in this market for any great revival of business, as there has been no extraordinary dullness; but in other sections of the country, where trade has not been so active, it is almost probable that a reaction will follow and the demand for goods greatly increase.

We have nothing special to report in regard to prices since our last letter.

#### Philadelphia.

**SUPPLEE HARDWARE COMPANY.**—The writer of the customary letters to *The Iron Age* has been absent at St. Louis at the fair during the past week. Trade during his absence has continued fair and has not receded from the general condition of the preceding two weeks. Collections are also fair.

#### Portland, Oregon.

**CORBETT, FAILING & ROBERTSON.**—Clearings still show an increase of nearly 25 per cent. over a year ago, and that, too, with millions of bushels of wheat going East by rail instead of seeking the coast ports for export, as is usually the condition. If our cattle and lumber were subject to normal demand we certainly would have a boom on in the Pacific Northwest.

An Oregon herd of short horns took first prize at St. Louis, and now an Oregon Jersey takes first in a milking contest, and that, too, with an average of nearly 12 per cent. over the prize winner at Chicago in 1893. Oregon also takes first for grass and grain exhibits, demonstrating clearly our supremacy as a stock country and that the awarding of prizes for live stock rests on a sound basis.

With loans at high level in New York and surplus low, and that, too, with money from Seattle, Portland, San Francisco, St. Paul, Kansas City, Omaha, Chicago and other money centers loaned there at an extremely low rate of interest, what will the gamblers do when money is wanted at home on account of improving business the country over? It looks as though the Wall Street boom would be nipped in the bloom. Trade is fair, but collections are not what they should be at this time of the year.

### NOTES ON PRICES.

**Wire Nails.**—An active demand characterizes the market, and the general condition of Wire and Wire products is strong. Restricting shipments to within 30 days from date of contract by the leading factor has had the effect of stimulating buying, indicating as it does the strength of the market, and hinting at a possible ad-

vance in prices. Carload prices to either jobbers or retailers remain as before, as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carload lots.....	\$1.60
Less than carload lots.....	1.65

**New York.**—While buyers are conservative in the quantity purchased, the aggregate amounts to a very satisfactory business for small lots from store. Regular carload buyers are purchasing in this quantity as their trade demands. The market is firm at the following New York quotations: Single carloads, \$1.79½; small lots from store, \$1.85 to \$1.90.

**Chicago, by Telegraph.**—Prices on Wire Nails thus far are unchanged, the impression prevailing that while independent producers are desirous of raising their prices they cannot do so until the leading producer makes an advance, something that that factor is slow about doing, in order to hold the independents down to a figure where price cutting is practically impossible. Carload prices to either jobbers or retailers are firm locally at \$1.75, base, with less than car lots at \$1.80 to \$2, according to quantity. Makers still refuse to sell more than 30 days ahead at these prices.

**Pittsburgh.**—Demand for Wire Nails continues active, the mills entering liberal orders, but only for shipment within 30 days from date of contract. This policy has been rigidly pursued by the leading mills since the recent reduction in prices was made and this fact, coupled with the heavy demand, leads to the belief that an early advance in price of Wire Nails is probable. In fact, the local trade is looking for it any day. We quote Wire Nails in carloads to either jobbers or retailers at \$1.60 and in less than carloads \$1.65 f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

**Cut Nails.**—No returns have been received by New York representatives of mills, and it is taken for granted that no change was made in prices at the meeting of the Cut Nail Association held October 27. Demand is of fair volume. While the association quotations represent the market in a general way, prices are sometimes shaded about 5 cents, or slightly more, to large buyers. Quotations are as follows: \$1.60 and \$1.65 for carload lots and less than carload lots, respectively, f.o.b. Pittsburgh. In the East Iron Nails are quoted at the same price as Steel Nails, but in territory west of Pittsburgh Iron Nails are quoted in carload lots, f.o.b. Pittsburgh, at \$1.65, with an advance of 10 cents in less than carload lots.

**New York.**—The market is without interesting features, except that demand is in about the same proportion as it has been for some time. The tone of the local market is firm. Quotations are as follows: Carloads on dock, \$1.74; less than carloads on dock, \$1.79; small lots from store, \$1.85.

**Chicago, by Telegraph.**—Nothing has been learned here of the proceedings of the association meeting which was to have been held in the East October 27. If such a meeting was held, prices have not yet been affected, for the old prices are still being quoted and a fair amount of business is being booked at from \$1.75 to \$1.80, Chicago, for Steel or Scrap Iron Nails, and 10 cents higher for Puddled Iron Nails.

**Pittsburgh.**—No change was made in price of Cut Nails at the meeting of the Cut Nail Association last week. Demand is moderate, but there is more of a disposition on the part of buyers to place orders ahead in the belief that any change in prices would be an advance. We quote Steel Cut Nails at \$1.60 in carloads and \$1.65 in less than carloads, f.o.b. Pittsburgh. For Puddled Iron Nails an advance of 5 to 10 cents a keg over Steel is asked. Our prices on Steel Cut Nails are sometimes shaded about 5 cents a keg.

**Barb Wire.**—The somewhat exceptional fair and mild weather has given a prolonged opportunity for fence building which has especially been taken advantage of by farmers in the West and Southwest, so that a good volume of business is being done. The market is firm. The leading producer still restricts contracts to shipment

within 30 days. Quotations as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.75	\$2.05
Retailers, carload lots.....	1.80	2.10
Retailers, less than carload lots.....	1.90	2.20

**Chicago, by Telegraph.**—Business is coming in in good volume from the West, and the prolonged season of favorable weather is extending the selling season beyond its ordinary limit. Prices are held firm, except in territories where the leading producer is opposing strong local competition. We quote: Jobbers, car lots, Painted Wire, \$1.90; Galvanized, \$2.20; retailers, car lots, Painted, \$1.95; Galvanized, \$2.25; less than car lots, Painted, \$2.05; Galvanized, \$2.35; Staples, \$1.85; Galvanized Staples, \$2.15. The jobbers' prices are named to large retailers by certain independent mills.

**Pittsburgh.**—The mild weather of the past month is partly responsible for the continued fair demand of Barb Wire, especially from the West and Southwest sections. The market is firm and there is some talk of an early advance in prices, but nothing official on this has been given out. Prices are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.75	\$2.05
Retailers, carload lots.....	1.80	2.10
Retailers, less than carload lots.....	1.90	2.20

**Smooth Fence Wire.**—The heavy demand continues and orders are confined to shipment within 30 days from date of contract. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.45
Retailers, carloads.....	1.50

The above prices are for base numbers 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....\$0.30	.35	.40	.45	.55	.65	1.05	1.15		

**Chicago, by Telegraph.**—There is no let up in demand for this product, a demand that is stimulated rather than otherwise by the refusal of producers to quote for shipment extending beyond 30 days. Prices on base sizes of Wire are unchanged at \$1.60, Chicago, for Annealed, and \$1.90 for Galvanized, in car lots to jobbers. The same prices are named to retailers in car lots by a number of makers.

**Pittsburgh.**—Demand continues quite heavy, being supplemented by the fact that consumers anticipate an early advance in prices. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.45
Retailers, carloads.....	1.50
Less than carloads.....	1.60

**Copper Goods.**—Owing to the advance in Ingot Copper slightly higher quotations are announced on Sheet Copper and Copper Wire. Other goods in which this enters as an important material are also feeling to some extent the effect of this advance, without, however, quotable change in price.

**Hatchets.**—The reduction in the price of Hatchets, which remains in force until the 15th inst., has the effect of stimulating somewhat, though not very heavily, the demand for these goods.

**Heavy Goods.**—The advances which have taken place in the raw material, and the strength of the market generally, have had the effect of inducing the withdrawal of extreme prices recently current on several lines of Heavy Goods in which the cost of the material is the principal item. Somewhat higher quotations are in some lines announced. The market, too, feels the general effect of the present condition of things and is characterized by a firm tone.

**Rope.**—The amount of business done in October was not as large as that of the preceding month, but this is apt to be the case. Present demand is fair, but not equal to the capacity of the mills. Quotations range somewhat in

accordance with the views of individual manufacturers, and are as follows for 7-16 inch diameter and larger: Pure Manila, 11½ to 12 cents; mixed grades, 9½ to 10½ cents, according to quality; Pure Sisal, 8½ cents, and Mixed Sisal, 7 to 7¼ cents per pound.

**Window Glass.**—Further advices in regard to the joint meeting of manufacturers and jobbers held last week is to the effect that the Manufacturers' & Jobbers' Window Glass Company was formed. The object of the company is to try and improve trade conditions by discouraging the practice of selling by the manufacturers to the retail trade. Under the terms and conditions of the new organization the jobbers agree to buy only from manufacturers who are members of the association, and manufacturers have pledged themselves not to sell to jobbers outside the organization. It has been agreed that a price shall be fixed below which Glass shall not be sold, while the price above this starting point shall be left to the discretion of the producer and purchaser. Violation of these agreements are to be punishable by money fines. The election of officers was postponed until November 3, when another meeting is to be held. If this project succeeds it will place the market in a stronger position than it has been for some time. Demand has improved with the prospect of a firm market to such an extent that some manufacturers have their books full of orders and are refusing additional business. This probably is not very general. A quotation made a little more than a week ago by a manufacturer to a large retailer was 90 and 20 per cent. discount for single and double strength from the jobbers' list of October 1, 1903. The following quotations from the manufacturers' list of January 1, 1901, in carload lots, are reported to have been more recently made: 90 and 10 and 5 per cent. discount for the first three brackets for single strength; for sizes above, 90 and 7½ per cent. discount. Double strength, all sizes, 90 and 7½ per cent. discount. Local jobbers are quoting from the jobbers' list of October 1, 1903, as follows: First two brackets, single, 90 and 15 per cent. discount; sizes above, 90 per cent. discount. It is supposed that the Manufacturers' & Jobbers' Window Glass Company will advance prices when the association gets in working order.

**Oils.**—*Linseed Oil.*—During the week past there has been a fair demand in small lots to meet current requirements. There appears to be little disposition to anticipate requirements to any extent, even by usually large buyers. The gradual falling off in the price of Flax Seed has not affected Oil quotations, but may account, in part, for the light buying of Oil. Quotations are as follows: State and Western Raw in carload lots, 38 cents; in five-barrel lots, 39 cents. City Raw, in lots of five barrels or more, 41 cents; in less than five barrels, 42 cents per gallon.

**Spirits Turpentine.**—Stocks in the Southern market are not large and receipts are only moderate, yet lack of demand seems to be forcing prices down. In the local market demand has been confined to jobbing lots, with an absence of buying in large quantities. Quotations in New York, according to quantity, are as follows: Oil barrels, 54 to 54½ cents; machine made barrels, 54½ to 55 cents per gallon.

Dr. L. S. Ricketts of the Greiner-Ricketts Hardware Company, Orange, Va., has disposed of his interest to H. G. Shackelford, and the business will be continued under the style of Greiner & Shackelford. An additional storeroom has recently been opened in which Stoves and Heaters, Harness, Saddles, &c., are displayed to advantage.

A. N. Snider has bought the Hardware, Stove and Paint stock of W. W. Weaver, Tilden, Neb., and continues at the old stand.

Shriver & Glass have recently begun business at Towanda, Kan., handling Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, &c.



## Hardware Association Items.

### THE ATLANTIC CITY CONVENTIONS.

Active preparations are being made by the National Hardware Association and the American Hardware Manufacturers' Association for their respective conventions, which meet simultaneously at Atlantic City, November 16, 17 and 18. The gathering promises to be of even more than the usual interest.

### NEXT YEAR'S SOUTHERN CONVENTIONS.

The fifteenth annual convention of the Southern Hardware Jobbers' Association will be held at Virginia Hot Springs, June 6-9, 1905. The headquarters will be at the New Homestead Hotel, which is an especially large and finely appointed hostelry, located in a very picturesque section of the country.

The semiannual meeting of the American Hardware Manufacturers' Association will be held at the same time and place, the New Homestead Hotel having ample convention halls for both meetings.

The above action was determined by the joint committee representing the manufacturers' and jobbers' associations, consisting of Fayette R. Plumb, C. W. Asbury, Henry B. Lupton, F. A. Heitmann, John Donnan and F. B. Dunlop.

### PENNSYLVANIA RETAIL HARDWARE DEALERS' ASSOCIATION.

The Executive Committee of the Pennsylvania Retail Hardware Dealers' Association has just decided on the dates for the next annual meeting of the association. The convention will be held on February 21 and 22, at Harrisburg.

### WISCONSIN RETAIL HARDWARE ASSOCIATION.

Everything points to an exceptionally large meeting of the Wisconsin Retail Hardware Association at the Republican House, Milwaukee, February 1 and 2. C. A. Peck, secretary, Berlin, remarks that the association is growing every day, and that the trade are apparently realizing more and more the necessity and benefit of association work. The insurance feature, which is proving a great success, has doubtless had much to do with the increased membership, but after the "froth has blown off," as Mr. Peck picturesquely puts it, there remains a solid and determined element which is willing to put time and money into anything that the merchants think will benefit existing conditions. The officers of the Wisconsin Association feel much encouraged to push on harder than ever, assured that they will be abundantly repaid.

### DEATH OF WILLIAM C. BEMIS.

**W**ILLIAM CHAPLIN BEMIS, one of the best known business men of Springfield, Mass., died on the 26th ult. from the effects of a stroke of apoplexy sustained two days previously. He had been in failing health for several years, but had not been confined to the house. Mr. Bemis was born in Willimansett, November 16, 1832, and went to Springfield with his parents in 1843. In 1855, when the Bemis & Call Hardware & Tool Company was organized, he was elected treasurer, and on the death of William K. Baker, in 1897, was also elected president, holding both offices at the time of his death. He was also a trustee of the Hampden Savings Bank. Mr. Bemis is survived by a widow and two sons, Howard R. and Edwin L. Bemis. The funeral was held on the 29th ult., over 100 workmen from the Bemis & Call plant being among the mourners.

THE PHILADELPHIA LAWN MOWER COMPANY, Philadelphia, Pa., has changed its New England agency for the Genuine Philadelphia Lawn Mowers, and Bigelow & Dowse Company, Boston, is now agent. The latter company will carry a complete line and stock of Hand and Horse Mowers, and samples of the 1905 line are now on exhibition in its store.

## DEDUCTING CASH DISCOUNT ON TARDY PAYMENTS.

*From a Manufacturer:* In *The Iron Age* of October 13 a manufacturer's comment on the "Jobbers' elastic interpretation of cash discounts" touches one of the unpleasant features of our business. Our terms are 2 per cent. 10 days, 1 per cent. 20 days, net 30 days, and scarcely a day goes by but a jobber, usually a small one or semi-jobber who has one or two men out and imagines we would be obliged to close if he withheld his patronage, sends in a personal check, often 20, sometimes 30, and occasionally 60 days after goods were shipped and deducts the full 2 per cent. cash discount, and offers all kinds of excuses, but the most general is "Goods just arrived," perhaps ordered shipped around "Robin Hood's barn" on account of special freight rates; we return their checks and it often results in unpleasant, caustic and sometimes abusive correspondence, which leads us to believe too many of the manufacturers are afraid they will offend their customers, who soon realize it and only abuse the favor extended and in the end do not respect them or their methods, as does the jobber the manufacturer whose terms mean just what they state.

If the jobbers who date their checks back a week or so, as the post mark on the envelope shows, and try all sorts of excuses to gain time and still enjoy the full cash discount, realized what impression it had on the manufacturer, even if accepted, they would never try it again. And the manufacturer who is elastic in his cash discount terms is often considered by the jobber as elastic in his prices, and it in reality creates a bad impression at both ends of the line.

Fortunately it is the small jobbers that spar hardest for time, but if all manufacturers would insist on payments within the time, or not allow the premium offered for prompt payments, the present uncomfortable correspondence received from parties whose checks were returned would be ancient history.

The fault lies largely with the manufacturer and he gets no thanks or reward therefor.

### PITTSBURGH RIVET COMPANY.

**T**HE PITTSBURGH RIVET COMPANY has succeeded to the business of the Dowerman Rivet & Bolt Mfg. Company, Thirty-second street and Penn avenue, Pittsburgh. The new company states that with increased facilities, through the use of strictly high grade materials and by giving the closest attention to the details of manufacture, it is able to supply a grade of Rivets which for strength, trueness to size and finish will be found satisfactory to the trade and consumer. The officials of the company are W. S. Evans, president; F. W. McLean, secretary and treasurer, and W. F. Dowerman, vice-president and superintendent. Mr. McLean has been connected with the Bindley Hardware Company of Pittsburgh for many years.

### FERROKRAFT COMPANY.

**T**HE FERROKRAFT COMPANY, expert metal worker in Hardware, Cleveland, Ohio, has just been organized under the laws of Ohio. The authorized capital is \$50,000. The officers are Wm. M. Powell, president and treasurer; Frederick C. French, vice-president; Myles E. Ewing, secretary; Peter Grabler, superintendent. Mr. Powell, the president, was formerly secretary and treasurer of the Columbian Hardware Company of Cleveland and is well known to the Hardware trade. Mr. Ewing was also connected with that company. Mr. French is a designer of ability, while Mr. Grabler is a skillful die maker. The Stevens Catch made by this company, we understand, is finding large sale. The company is also getting ready to announce some new lines.

R. E. Prince, Raleigh, N. C., has disposed of his stock of Hardware, Stoves, Paints, Carriage and Wagon Materials, Cement, &c., to the Carolina Hardware Company.

## THE CATALOGUE HOUSE QUESTION.

*From a number of letters received on this subject we make the following extracts. They represent, it will be seen, a wide diversity of sentiment and touch upon many topics connected more or less closely with the catalogue house problem:*

### Relations Between Manufacturers and Jobbers.

*From an Ohio Manufacturer:* We have read the circular of the Joint Committee and it sounds somewhat antagonistic. We will admit that a protective tariff protects the home manufacturer from foreign manufacturers who employ cheap labor, but it does not protect the manufacturer from competition from home manufacturers.

### Joint Committee's Digest

Take, for example, the Shovel business of to-day. Competition has been fierce the last 18 months among the Shovel makers, and, if not expressing it too strongly, some of the factories are selling Shovels for less than cost in order to keep their plants going, and there is no jobber who has his special brands but what has caused first one and then another factory to lower the price, and we believe that 90 per cent. of the Shovels sold to-day are sold under special brands and in competition with the manufacturer's own brands.

The next thing the jobber will be asking the manufacturer to do will be not to sell the large jobber more goods than he can actually sell in his own legitimate territory. We heard, two or three years ago, where a jobber bought more Bolts than he could sell in his own territory, but kept the price up in that territory, and went out in other jobbers' territory and dumped his surplus at a price lower than the then ruling price of the manufacturer.

### Jobbers Dumping Their Surplus

Another question arises: If the manufacturer absolutely refuses to sell to a catalogue house at any price, or even at a retail price, will the jobbers throughout the country eliminate the retail departments of their stores, thereby protecting the retailers in their own towns? Will the jobbers agree to take the whole output of such manufacturers (the latter agreeing on their part not to sell the catalogue houses) at a price which will net the manufacturer a profit?

A manufacturer told the writer the other day that they had an account with one of the Chicago catalogue houses of over \$20,000 per year, and that they cashed their invoices within ten days, and that they never had so much as a claim for shortage, but had several times been requested to render bills for overfilling the order which had not been discovered at the factory.

### Catalogue House Business Methods

### Catalogue Houses Here to Stay.

*From a Manufacturer in New York State:* From this end of the 'scope it appears to us a waste of time and paper to go after catalogue houses. There are only a very few that cut any figure, and they are so well fortified and amply backed with capital that they can buy up plants and make all the goods they handle. Notices are published every day of a plant of some kind having passed into their hands, and if every manufacturer in the land should cut them out it would be a matter of only a few days before a new concern would spring up, eager for their business, which, it is not to be denied, is very alluring.

### Establishing Their Own Plants

### Wisdom of Making Leaders in the Hardware Store.

*From a Connecticut Retail Merchant:* In our opinion it is not necessary to meet all the prices the catalogue house puts out, but we think it is good business policy

to make leaders of certain articles and in that way fight the catalogue houses on their own ground. The average Hardware dealer forgets that it is just as good business policy to advertise his store by selling a few things below cost as it is to spend twice or three times the amount he would lose by advertising in the newspapers.

### How to Meet the Competition.

*From a Retail House in Pennsylvania:* We think the catalogue houses and their manner of doing business a great annoyance to the retail Hardware merchant at times, but we do not think the remedy is found by ignoring the jobber and trying to buy all goods from the manufacturer. Have always found the jobbing Hardwareman to be a good and valuable friend to the retail dealer, and one that we cannot get along without.

### The Jobber a Friend

It is true there are some lines of goods and some times when we can buy goods for less money direct. It is also true that were we to place the same size order with the jobber, and pay the bill as promptly as we do the manufacturer, we could very often get a better price from the jobber.

Our own plan of meeting this competition has been to try to get hold of the goods the catalogue houses are putting out. When we are able to do this we find that 90 per cent. of the goods are not a standard make, or standard size, but are of inferior quality, and if we had the same goods we could sell them at the price offered by the catalogue house and make money. In looking over your digest of catalogue house prices we note "Garden Barrows, \$2.50." If any one were to send for that Barrow they would find it was only a boy's size, and not large enough to be at all practical for a man to use. Any Hardware store sells the same Barrow for \$2.50.

### Low Quality of Catalogue House Goods

In this same line of thought, last summer the writer spent a little time in Atlantic City, and on two or three occasions went through two large 10-cent stores located on the Boardwalk, noting their goods and prices, particularly in the Glass and China Ware. In September of last year we opened a Glass and China department of our own. We find that we can buy Glass Dishes and China Cups and Plates of a better grade than the 10-cent stores are offering for 5 cents each at 15, 18 and 20 cents per dozen, and that in not very large quantities. Thus, you see, they had 300 per cent. profit. When it comes to their 10-cent goods, we find that we can buy the same grade of goods which they sell for 10 cents each at 35 to 50 cents per dozen. And yet we often hear how cheap things are bought in the 10-cent stores.

### Have Opened a China Department

This, we think, is about the same kind of competition that we get from catalogue houses. When customers go to a straight Hardware store they do not want, and will not have, the same class of goods as the 10-cent stores and catalogue houses furnish. We have no faith in customers' statements that the goods are just the same. We do not say they tell an untruth, but it is so easy to be mistaken. Right here is the place to get your hand on some of the merchandise that catalogue houses are selling so cheap. Further, if catalogue houses are such good places to buy from, why does the customer leave them and come to you? None of us tell when we get our fingers burned.

We could go into this matter deeper, using more illustrations, but our conviction in the matter is that the

### Customers Have Been Deceived



more information we have about the goods we are selling, and the better posted about the different lines of the same goods that are being made and put out through the country, the better we are prepared to meet catalogue house or any other competition intelligently and sell our goods. This takes time and brains, and sometimes we do not give this branch of the business as much attention as it should have.

Everlastingly at it is our only salvation. The Hardwareman always has so many irons in the fire that it is very difficult to keep some from scorching at times. The best weapon for all competition is a thorough knowledge of all the lines of goods we are offering for sale. That, with a clean, well arranged store, polite salesmen and prompt, businesslike treatment of all orders, should draw trade and keep it.

#### Enterprise and Push

#### Jobbers Charged with Insincerity.

*From a Merchant in Western New York:* We do not consider that the jobbers and manufacturers are honest in their efforts to help the retailer. We do not have the trouble with the catalogue houses that we have with the jobbers. There are no jobbers that we are acquainted with in New York State but give the retailers more trouble than the catalogue houses.

In the first place, they retail goods themselves to any one from any place. Their agents also go from town to town and solicit and sell to every one they can induce to buy Hardware—department stores, racket stores, dry goods stores, lumber dealers, plumbers, blacksmiths, carpenters, &c.—selling them goods at practically the same price they sell to the retailers. They work every small town, and if any one in any kind of business wants to buy Hardware they will find him and sell him.

Until this practice is stopped and the jobber acts as though he wished to help the retailer we do not care to discuss the catalogue house question. At one time we belonged to a Merchants' Retail Protective Association. We thought they would do something to compel the jobbers to stop their retailing, but they did not attempt to; therefore we withdrew.

The jobbers do everything in their power to prevent the manufacturer from selling any person or persons except themselves, and still they are not willing to give the retailers a chance. If you wish you can find a number of retailers who feel just as I do.

#### Good Methods and Energy.

*From a Merchant in Pennsylvania:* I have been greatly interested in the discussion of the catalogue house business in your valuable paper. I think the catalogue houses are receiving entirely too much gratuitous advertising. We must all recognize the fact that purchasers will buy where they can buy the cheapest, and I think if dealers would cater more to the wants of their customers, advertise extensively, avoid excessive margins, discount all their bills, they would soon have a trade and credit that would make them desirable customers. There would then be competition for their trade, and they would naturally be able to buy at the lowest price.

Keep a good assortment of goods artistically displayed, and customers will come to you and make selection rather than send to a catalogue house, where the money must accompany the order.

The above plan was followed by me in building up a new business, until it is now considerably more than double what it was six years ago, when I bought it.

THE CONSOLIDATED WIRE FENCE COMPANY, formerly of Hutchinson, Minn., has removed its plant to Minneapolis. "Discriminating freight rates" is given as the reason for the change of location.

## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE,  
NORFOLK ST., LONDON, W. C., October 22, 1904.  
The Week's Hardware Trade.

THERE is not much change to be noted this week in the Hardware and Cutlery industries. The position of Ivory in relation to the Cutlery trade is, if possible, made worse by the Liverpool sales this week. The high prices at the last Antwerp sales would, it was hoped, suffer a considerable reduction at Liverpool, but this has not been the case, and the consequence is that Sheffield Ivory cutters and merchants have less and less inducement to buy. They cannot persuade the Cutlery manufacturers—all but a few of whom buy their Ivory as they want it from the cutters, not finding it remunerative to stock and cut this material themselves—to pay any higher prices. The Cutlery manufacturers say it is impossible to raise their prices for Ivory Handled Cutlery, because Ivory happens to have a fluctuating value. Consequently, except for the small steady demand which exists for Ivory for the highest class of Table Cutlery, the use of Ivory tends to diminish, and that of Celluloid and other hafting material to increase, and it must be admitted that the preference for Ivory is almost wholly sentimental. The more the public grow used to Celluloid the more they appreciate it.

Galvanized Hollow Ware makers have experienced a considerable accession of orders within the past few days, but the high price of Spelter hits their profits rather badly. There is an improved demand for Stoves, Grates and Heating Appliances, and for Fenders, Fire Brasses and Hearth Furniture. The general state of the Hardware and Metal trades during the past month is summarized as follows:

BRASS WORK, BEDSTEAD MAKING, &c.—Employment continued bad in the Brass trade generally; it was worse than a year ago. Employment was reported fair at Exeter, and moderate at Rotherham, and there was an improvement in the Fender and Fire Brass branches in Birmingham.

NUTS, BOLTS, NAILS, &c.—Employment with Nut and Bolt makers was fair in the Wolverhampton district and in South Wales, and moderate in Birmingham and Smithwick. In Birmingham employment was moderate with Nail makers, and it was quiet with machine made Rivet makers. In the Blackheath district it was bad with makers of Wrought Nails and Rivets, and also of Malleable Nails and Protectors in Oakengates.

CHAINS, ANCHORS, ANVILS, VISES, &c.—With Cable Chain makers and strikers, and Anchor smiths employment was bad at Cradley, and slack with makers of Block Chains, Side Welded and Dollied Chains. In the Tyne district the Chain makers were fully employed, but employment with Anchor smiths was scarcely so good. At Pontypridd employment was fair in the Chain trade and was slack in the Anchor trade. With the Anvil and Vise makers in the Dudley district employment was slack, and some half time was worked. In Birmingham and West Bromwich employment was fairly good with Axle makers, and at the latter place the Spring makers were fully employed; in South Wales employment with the Spring makers was good. At Wednesbury employment was slack with makers of road Axles, Springs and Iron and Steel Forgings, but good with makers of Railway Axles and Tires. Employment was bad with makers of Bit, Stirrup, Chain and Cart Gear at Walsall.

LOCKS, KEYS AND GENERAL HARDWARE.—In the Lock and Latch trade employment continued bad, and was worse than a month ago and a year ago, and there was a good deal of short time in both the Wolverhampton and Willenhall districts. With the Hollow Ware makers at Birmingham employment slightly improved, at Wednesbury it was fair, and at West Bromwich quiet. At Sheffield the Hollow Ware stampers were quiet and the Hollow Ware buffers slack. With makers of Brazil and Plantation Hoes at Wednesbury employment was good, and quiet with makers of Spades and Forks and Vermin Traps at Stourbridge. There was fair employment for makers of Iron Fences and Hurdles at Wednesbury. Employment for the makers of Electrical and Cycle Fittings at Oakengates was bad.

FILES, EDGE TOOLS, &c.—In the Wolverhampton district employment with File smiths was fair, while at Sheffield the File trade generally was slack, and employment with the File Cutters at Birmingham was bad. Edge Tool makers were slack at Sheffield, but there was fair employment at Birmingham.

CUTLERY, &c.—In Sheffield employment for Pocket

Knife grinders and cutlers was moderate, for jobbing grinders and Sheep Shear makers it was quiet, and slack in other branches. Employment in the Needle trade at Redditch was quiet; at Nottingham it was bad, and worse than a year ago.

**WIRE WORK.**—In Glasgow employment with Wire workers and Wire weavers was good. The Wire drawers at Ambergate had fairly good employment; those at Halifax had fair employment; at Warrington it was not very good. Employment with the Wire workers and weavers in London, with the Wire weavers in Birmingham, and with the Wire drawers in Sheffield was bad; with the Wire drawers in Birmingham it was bad; in other centers it was slack.

#### Trade-Marks in China.

American exporters doing business with China should note the new regulations concerning the registration of trade-marks, which come into force October 23.

A central registration office will be opened in Pekin, with branch offices in Tientsin and at Shanghai, where applications may be made.

#### Prospects in Australia.

It is sometimes a good plan in attempting to reach an accurate understanding of the commercial position of a country to watch financial results of trading companies having large connections there. This applies in the case of Paterson, Laing & Bruce, who do a large trade with Australia.

At the annual meeting the chairman observed that it was held in circumstances very different from those which prevailed a year ago. The business showed greatly improved results. The trading profit amounted to £48,706, as compared with £28,769 a year ago, an increase of nearly 70 per cent. At that time, in common with all houses in the Australian trade, they had a gloomy tale to tell of the depression caused by the drought. Now there had been an abounding harvest, in excess of the estimates; the understocking of sheep was being remedied by natural increase; there was an astonishing rise in the average yield of grain, and a striking advance in the number of live stock. The company was doing well both in Melbourne and Sydney. The farmers had had good times, but they had heavy burdens to wipe off, and they were wisely using the prosperity of the year under review to reduce their commitments. The consequences of their making large repayments to banks and financial institutions was that they did not buy goods freely. Moreover, those who could afford it held back their produce for better prices, and this action tended to make cash less abundant and diminished sales. This, however, was counterbalanced by the fact that considerable purchases were needed to make up for the economies of the previous year.

#### South African Freight Rates.

The dispute between the British shipping rings and South African merchants and importers is rapidly coming to a head, and we may expect developments in the near future. An interim report of the conference of delegates from the South African Colonies appointed to consider the ocean freights, has been issued. This report not only makes certain specific recommendations, but freely comments upon the situation. It sets out a series of resolutions, which will be read with interest by American exporters. On the subject of proposed legislation, the conference remarks: "With reference to the proposed legislation prohibiting a discrimination between shippers, the conference is aware that such contracts are usually entered into beyond the jurisdiction of the South African courts. Under the circumstances, the conference has been obliged to content itself with the suggestion that legislation should be enacted, laying down on set terms the policy of South African law on the question of discriminating contracts. The effect of the legislation would be to make any such contracts illegal and inoperative, so far as they are designed to take effect within the jurisdiction of the South African courts."

Among the resolutions, the following may be noted:

a. That the present tariff rates of freights charged to the general public and enforced by the shipping ring from the United Kingdom, are excessive and detrimental to the interests of South Africa.

b. That the differentiation in rates by the ring to

South Africa between the United Kingdom and America is injurious to British manufacturers, and offers unfair advantages to American trade.

c. That the present system of giving special contracts by the ring is inimical to the interests of South Africa, disorganizes trade, and, if continued, will have far-reaching and prejudicial effects on the commerce of the country.

d. That the best means of obtaining reasonable, uniform and maintained rates of freight from the United Kingdom to South Africa will be found in the co-operation of the South African Governments, public bodies and importers generally."

In addition to the foregoing, a number of resolutions were framed to prevent unfair competition and to insure stability of rates.

### J. STEVENS ARMS & TOOL COMPANY'S ST. LOUIS EXHIBIT.

THE exhibit of the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., at the Louisiana Purchase Exposition, which is illustrated herewith, is located at the corner of Third and B streets, in the Manufactures Building. Realizing that moving attractions always command attention, the company arranged a hunting



scene, with a life size figure of a young woman dressed in hunting costume and holding a Lady Model Stevens Shotgun. Out of the brush in the rear of the scene a rabbit appears and runs along a log to the far end, and at this point the young hunter raises her Gun, shoots the rabbit, which disappears, returning again every three minutes. The rabbit and its movements are so lifelike that the exhibit "holds the crowd" very well. An electric revolving five-panel sign is employed to call attention to the quality and popularity of the Stevens products. Fire-arms and accessories are displayed in glass cases, with neat tags attached by ribbon. The exhibit is 12 x 18 feet, the height to top of dome being 20 feet. The exterior is of relief work finished in white, blended with green.

GEO. H. HARPER has resigned his connection with the sales department of Clendennin Bros., Baltimore, Md., and will return to the National Enameling & Stamping Company November 10. Mr. Harper, who is well and favorably known to the Southern trade, was formerly identified with the National Company.



## THE BUDKE STAMPING COMPANY.

**T**HE BUDKE STAMPING COMPANY has been organized at Canonsburg, Pa., and will manufacture a full line of Stove Pipe; also Pieced and Corrugated Elbows made of acme blue and other grades of sheets; Drip Pans, Metal Lathing, Powder Kegs and Plate Iron Washers. The officials of the company are as follows: John F. Budke, president and general manager; John M. Watson, vice-president and business manager; William H. Paxton, treasurer, and George W. Retberg, secretary. The plant is now in operation, and the company is making a number of the specialties referred to.

## IMPLEMENT SALES CONTRACT.

**T**HE dissatisfaction felt among many Implement dealers with the 1905 sales contract offered the trade by the International Harvester Company has culminated in a meeting between the officials of the Harvester Company and a committee from the National Retail Implement & Vehicle Dealers' Association, headed by President Allen and Secretary Hodge. This meeting convened this (Wednesday) morning, but no understanding was arrived at up to noon.

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations &c., relating to general lines of goods.*

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses and are referred to the manufacturers:

FROM THE AMERICAN AGRICULTURAL CHEMICAL COMPANY (Supply Department), 26 Broadway, New York.

FROM GLASSER & WEISS, Wilkes-Barre, Pa., who have recently opened up in the Hardware, Sporting Goods, House Furnishing, Stove and plumbing, gas fitting and tinning business.

FROM WHITE BROS., Laurelvile, Ohio, who have purchased the Hardware business formerly conducted by Armstrong Bros.

FROM JAMES W. ATHERTON, Momence, Ill., who has succeeded his father, M. A. Atherton, in the Hardware, Stove and Sporting Goods business.

FROM J. H. MILLER & Co., West Salem, Ohio, who have bought the General Hardware business of Baughman & Holmes.

FROM GEO. H. MEYER, Du Quoin, Ill., who has lately embarked in business as dealer in Hardware, Stoves, Tinware, Sporting Goods, &c.

FROM N. GOODIER, Dardanelle, Ark., whose wholesale and retail business in Hardware, Stoves, Implements, Paints, Sporting Goods, &c., was damaged by fire a short time since.

FROM F. A. BOUZEK, Linwood, Neb., who has succeeded A. A. Bouzek in the Hardware, Stove, Harness and furniture business.

FROM CANADIAN AGENCY COMPANY, Winnipeg, Manitoba, who desire especially catalogues and price-lists of Builders' and House Furnishing Hardware, Ornamental and Wire Fencing and Gates, Engineers' and Miners' Hand Tools and Accessories, Iron and Steel Sheets, Metals, &c.

FROM WILLIAM FLETCHER & SONS, LIMITED, Edgboston street, Birmingham, England, who desire copies of catalogues of general household and small builders' requisites suitable for export to England.

FROM WASHBURN-WOLFE HARDWARE COMPANY, Port Clinton, Ohio, which has purchased the wholesale and retail business formerly conducted by Henry Bredbeck.

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## J. D. WARREN MFG. COMPANY'S EXHIBIT.

**A**N exhibit of more than ordinary interest to the Hardwareman at the St. Louis World's Fair is the "Model Hardware Store," the ingenious method adopted by the J. D. Warren Mfg. Company, Masonic Temple, Chicago, for bringing to the notice of Exposition visitors the products of the company in the way of the most approved appliances and fixtures for accommodating and displaying the varied stock carried by Hardware merchants. This striking and effective exhibit, which has entertained and instructed many visitors, occupies a space 20 x 45 feet in the Varied Industries Building, directly in front of entrance No. 16.

## AMERICAN VS. EUROPEAN BUSINESS METHODS.

**A**BUSINESS transaction that came incidentally to our notice recently graphically illustrates the contrast between American and European trade methods. A Hardwareman who has been actively engaged in Hardware and Ironmongery in a well-known New Zealand city

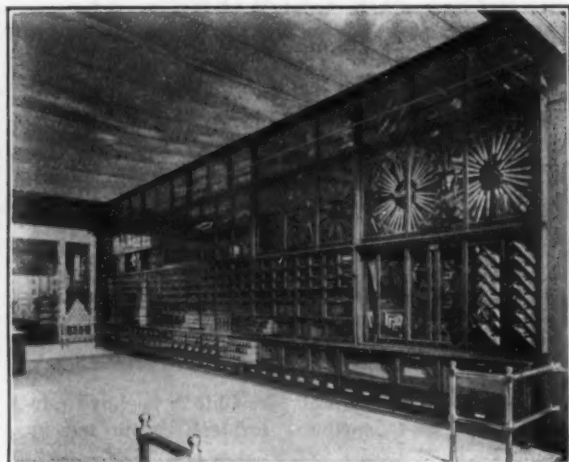
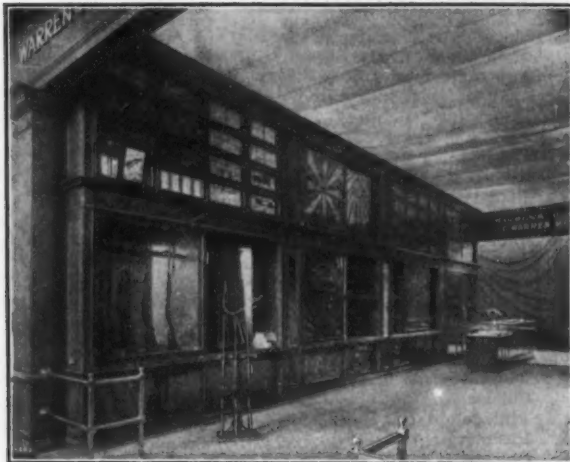
## TRADE ITEMS.

**THE PERFECTION MFG. COMPANY** announces the removal of its office from Muncie to Cowan, Ind., where the factory is located. The company makes Washing Machines, Lawn Swings and Step Ladders.

**THE DURANT COUNTING MACHINES**, manufactured by the W. A. Durant Company, Milwaukee, Wis., have been awarded a gold medal at the St. Louis Exposition. The company's exhibit is located in the Agricultural Building, group 86, block 121. The company also shows Counters working on the E. W. Bliss Presses in Machinery Hall and on Dexter Folders in the Liberal Arts Building.

**THE officers of the Rockford Bolt Works**, Rockford, Ill., are making efforts to reorganize the company. The plant will operate for a time, by consent of creditors, to work up materials on hand.

**THE D. M. BASSETT BOLT WORKS**, Derby, Conn., has been reorganized with the following officers: Frank W. Beardsley, president; L. M. Bassett, secretary; David A. Nichols, treasurer; George W. Sneden, general manager and superintendent, and Messrs. Nichols, Beardsley and



*J. D. Warren Mfg. Company's St. Louis Exhibit.*

for about 10 years is now in this country making arrangements for representing American manufacturers direct in the same city for his own account. Asked by the president of a prominent American manufacturing house making lines of fine Mechanics' Tools and Hardware specialties for a statement of facts from which to draw definite conclusions, an arrangement to represent him was finally determined on. Then began the surprises for the visitor. Regarding samples, he requested that one of each of the leading articles be sent for exhibition, but the manufacturer, believing that the thing was worth doing adequately, said he was disposed to send out a generous line of the principal goods so that a possible customer would not be compelled to imagine the relative differences in sizes instead of actually seeing the article itself. Then again, after deciding to close a bargain after an hour's discussion, the head of the manufacturing company proposed going to dinner at the club and there perfect some of the details. At this the New Zealander marveled and alluded to his experiences lately in Great Britain, where, on similar errands, after waiting two weeks he was requested to call again, which meant that he was put off another week. Again the American manufacturer, cognizant of the difficulties incidental to the introduction of American lines against those from Europe already introduced, and wishing to expedite the preliminary work, calmly announced that he would increase the agreed commission for the first year 50 per cent., as an incentive to hard, faithful and energetic work. At that the visitor was astonished, but he accepted the proposition and now it is his turn for a showing.

Bassett, directors. In addition to former products the company is contemplating the manufacture of light specialties in the Hardware line, such as Belt Punches, Pipe Wrenches, &c.

**WIEBUSCH & HILGER**, 9-15 Murray street, New York, have recently taken the sole agency in this country for marketing the product of Wm. Hjorth & Co., Jamestown, N. Y. Among the goods made by this firm are Wrenches and Pliers. The Empire Pipe Wrench is made in 10, 14 and 18 inch sizes; the Lightning Combination Wrench and Plier in 6, 7, 8 and 12 inch lengths; the first two nicked and the rest highly polished. They also make a 6-inch combination Gas Plier, Wire Cutter, Wrench and Screw Driver in one tool.

**KEUFFEL & ESSER COMPANY**, 127 Fulton street, New York, at the St. Louis Exposition have been awarded a grand prize for Instruments of Precision, Philosophical Apparatus, &c., in the Liberal Arts division, and a gold medal for Instruments and Equipment for underground surveying in the Mines and Metallurgy division.

**LEWIS D. WYNN**, manufacturer of the Black Silk Stove Polish, which has had a large sale in the trade, died on the 23d ult., at Sterling, Ill. Mr. Wynn began making the Polish 20 years ago, and it is said that it was a great source of comfort to him while lying on his death bed to read orders from customers who have been handling the Polish since it was first put on the market, thus testifying to their satisfaction with it. The business will be continued by the Lewis D. Wynn Estate, who will use the same quality of material and the same process of manufacturing as heretofore.



# FACTORY COST AND BUSINESS METHODS.

## PLANT INVESTMENT.

BY GUY P. MILLER, ASSISTANT SECRETARY BRIDGEPORT BRASS COMPANY, BRIDGEPORT, CONN.

THE plant investment of the Bridgeport Brass Company is recorded by departments under the headings "Buildings," "Machinery," "Tools and Fixtures."

In starting this ledger it was first necessary to take a complete inventory and estimate the value of each building, machine, &c., this value being based on the estimated life. The life of a machine or tool does not depend absolutely on the time which it is supposed to last, but necessarily must depend somewhat upon new inventions

debited to "Factory Expense," and spread over the costs. In this way a fund is accumulated from earnings for replacement of worn out equipment. (All repairs are charged directly to "Factory Expense.")

Under average conditions a life time of each machine or class of equipment will determine the depreciation, each year an amount being charged off which represents the percentage which one year bears to the whole estimated life. In case a machine outlives its estimated life, it is again appraised and its value deducted from the depreciation charge of the current month.

Fig. 1 shows front of machinery card, which contains the record relating to the value of the machine, while the reverse side, Fig. 2, contains the record of repairs or cost of maintenance. In this way

### A Complete History of Each Machine

is kept on file and comparisons between the results obtained by machines doing the same class of work may readily be made. This is of especial advantage in the

Department <u>36</u>				Plant Investment				Machinery			
No.	<u>677</u>	Name	<u>2 Automatic Screw Machine</u>					Estimated Life	<u>10 years</u>		
Made by or Purchased from	<u>Screw Mach. Co.</u>		Date	<u>Jan 1 1903</u>			1720	Rate of Depreciation	<u>10%</u>		
Date Installed	<u>Jan 15 - 1903</u>	Original Cost \$	<u>12.00</u>		Inst. Cost \$	<u>19 75</u>		Total Cost \$	<u>12.75</u>		
Depreciation					1903		Depreciation				
Date	Order No.	Item	Value	Total	Date	Amount	Bal.	Date	Amount	Bal.	
Jan 30			5.08		Jan 30	1.214	6.7				
Feb 28			10.16		Feb 28	1.204	5.1				
Mar 31			10.16		Mar 31	1.194	3.5				
Apr 30			10.16		Apr 30	1.184	1.9				
May 31			10.16		May 31	1.174	0.3				
Jun 30			10.16		Jun 30	1.163	87				
Jul 31			10.16		Jul 31	1.153	71				
Aug 31			10.16		Aug 31	1.142	55				
Sep 30			10.16		Sep 30	1.132	39				
Oct 31			10.16		Oct 31	1.122	23				

Fig. 1.—Machinery Card, Giving Record of Value of Machine.

and methods. It is, therefore, not a safe or conservative policy to consider that repairs and renewals keep the value of a machine intact and that a machine does not depreciate in value or that a slight ratio of depreciation, say, 5 per cent., is sufficient to take into account.

case of such machinery as automatic screw machines, of which there are a variety of makes, the initial costs of which vary, as does also the cost of maintenance. It is also valuable to have a supplementary report, showing the daily product of each machine.

COST OF MAINTENANCE									
Date	Order No.	Val. of Repairs	Date	Order No.	Val. of Repairs	Date	Order No.	Val. of Repairs	Remarks
Apr 8		75							
" 19		1.65							
" 20		2.0							
May 29		3.6							
July 29		2.5							
" 31		3.2							
Jan 1		6.25							

Fig. 2.—Reverse Side of Machinery Card, Presenting Record of Repairs or Cost of Maintenance.

### Machine or Tool Infirmities.

In these times of scientific investigation as to the methods of cutting down costs and increasing efficiency there are few lines of business where any productive machine would be of much or any value when ten years of age. It might be well just here to say in substantiation of this statement that the Patent Office issued in 1873 11,615 patents; in 1883, 20,837, and in 1903, 31,046. This shows a large and constant increase, although the first thought would be that new inventions must naturally grow less.

The method of considering that repairs and renewals keep the investment intact represents one extreme of plant valuation, and a forced sale valuation of plant assets represents the other. It is, therefore, only just to the stockholders of any corporation that plant assets be valued by a policy between these two extremes.

Starting, then, with an actual inventory of plant assets based on their original cost and the expected life, a grand total is made up which represents as nearly as possible the value of plant assets to the company as a going concern.

### A Fund for Replacement.

Depreciation is figured monthly, the total amount each month being credited to "Reserves for Plant" and

It can be readily seen that the following facts are necessary in making a comparison between several different makes of machines for the same kind of work.

Plant Order No.	To Department	Date of order
1720	41	Jan 1 1903
Please examine the following order, returning this order on completion of the work to the Superintendent.		
Charge all material and labor to the above plant order number.		
Work to be done by	Department	Date completed
\$0.20	36	Jan 10/03
Purchase and install one		
Screw Machine Letter H		
To be completed by date as below.		
As soon as possible	Approved	Sept.
		A. S. P.

Fig. 3.—Plant Order for New Machinery, Whether Purchased Outside or Made in the Shop.

First.—The initial cost.

Second.—The cost of maintenance or of keeping in good repair.

Third.—The production in pieces.  
The latter figures should be taken over a long enough period of time to guarantee a fair comparison.

Comparative Results.

The methods of obtaining and recording this information will now be explained and comparative results shown

Order No. P.O. 1720	To Department 36	Foreman <input type="checkbox"/>	Date Jan 1 1904	Form 55
Quantity	Description Auto Screw Machine Letter "H"	Value 1200 00		
Delivered Jan 12/03 Received by M Jones				
Only one item on a card MATERIAL DELIVERED CARD				

Fig. 4.—Material Delivered Card.

of two different makes of machines, making the same article.

All new machinery, whether purchased outside or made in the shop is ordered by means of a Plant Order, Fig. 3, which is issued on request of the superintendent by the clerk in charge of the Plant Ledger. The order

Plant Order No. 1130	DEPARTMENT 17	DATE Jan 15 1904	EXPENSE
NAME Sam Benson	ORDER NO. 1720		Foreman, Making, Timekeeper, Repairing, Weigher, Cut-Off, Trucking, Inspecting, Sweeping, Assorting, Oiling Mach'y, Watchman, Cleaning, Grinding Rolls, Setting Tools, Grinding, Elevator, Planing, Chiseling, Milling, Casing, Welding, Marking, Forging, Counting, Packing,
FOR DEPT NO. 36	DESCRIPTION OF WORK Screw Machine		
MACH NO 677			
REGISTER NO			
OPERATION Setting up			
6 1/2 7 1/2 8 1/2 9 1/2 10 1/2 11 1/2 12 DAY			
X 1/2 1 1/2 2 1/2 3 1/2 4 1/2 5 1/2 6			
TIME	PIECE	APPROVAL L. J. F.	HOURS 10 1/2
			RATE 37 1/2
			VALUE 317 1/2

Fig. 5.—Expense Labor Card, Giving Cost of Setting Up Machine, Number and Location.

is written in duplicate, the original being sent to the department whose business it is to set up or install the machine, and the duplicate kept in the "Unfilled Order" box. On receipt of the Plant Order, the department

Material	Value	Labor	Hours	Value
Date Jan 15 1904		Date Jan 15 1904	19 1/2	7 1/2
Auto Screw Machine No. 677	1200 00			
Belted - Outlay - Belt Flute and Machine	10 69			
Factory Expense @ 25 % 5				
Total Material	1210 69	Total Labor and Factory Expense	9 04	
For S. O.	20	Aggregate	1219 73	

Fig. 6.—Plant Ledger Card, Giving the Total Cost of Machine.

makes a requisition called Material Delivered Card, Fig. 4, on the Stores Department to order the machine. The Material Delivered Card is finally returned by the Stores Department to the Plant Ledger Clerk, who transcribes the amount of cost to the Plant Order.

From the labor cards Fig. 5, of the department which installed the machine is obtained the cost of setting up, the number of the machine and its location. On completion of the Plant Order the total cost is transcribed to the Plant Ledger Card, Fig. 6. Thereafter, the cost of alterations and repairs is posted direct from the labor cards, unless the repairs amount to \$25, when a Plant Order is issued.

The Record of Production

is obtained from a different form of labor card, Fig. 7, which is similar to the direct labor cards in use in all departments. Footings are made from these cards by means of an adding machine, and totals made up weekly.

FORM 120-25 MAN NO. 710	DEPARTMENT 36	DATE Jan 10 1904	OPERATIONS
NAME John Smith	ORDER NO. 2730		Machining (Auto) Milling " (Hand) Turning
QUANTITY Lbs. No. to lb. Pieces 2500	DESCRIPTION OF WORK Brass Nuts		Drilling Tapping Threading Counterboring Sawing Boring Forming Swedging Trimming Heading Pointing
OPERATION			
6 1/2 7 1/2 8 1/2 9 1/2 10 1/2 11 1/2 12 DAY			
X 1/2 1 1/2 2 1/2 3 1/2 4 1/2 5 1/2 6			
TIME	PIECE	APPROVAL K. L. M.	HOURS 4
			RATE 25
			VALUE 100

Fig. 7.—Direct Labor Card, Giving Record of Production.

Fig. 8 shows form of monthly report, comprising the totals of weekly reports made up on similar forms.

Figs. 1 and 2 show the record of an automatic screw machine of one type, while Figs. 9 and 10 give the record of another style of machine doing the same work. Fig. 8 shows the monthly production report, both machines turning out the same article.

From these records we obtain the following facts, the value of which is very much appreciated when considering a new purchase:

	No. 677 machine.	No. 639 machine.
Initial cost.....	\$1,219.75	\$473.00
Cost of repairs, first year.....	9.78	6.38
Five months' production, pieces.....	251,776	137,584
Proportion of one man's time running machine, hours.....	2	1

As each machine occupies practically the same amount of floor space, the value of this space should also be considered.

Setting Up Machines.

Another consideration in case of machines being wanted to do comparatively small lots at one time, is

AUTOMATIC SCREW MACHINE REPORT.			
MONTH ENDING MAY 31st, 1904.			
Make of machine.	Machine No.	Article.	Production.
677	35	Brass Nuts.	50,125 pieces.
639	"	"	27,409 "

Fig. 8.—Monthly Production Report.

the length of time required to set up the machine. It will be seen that it is necessary to set up two machines of the style of No. 639 to get out the same number of pieces in a stated time that could be obtained from a machine of the style of No. 677. The same amount of money expended for the cheaper style of machines, based on the above record, would yield the larger return.

Plant investment cards for buildings and tools and fixtures are similar in form to those used for recording



machinery. Small tools which wear out rapidly should be considered in the cost of running expenses, and not in the list of permanent investment.

HARDWARE DEALERS' MUTUAL FIRE ASSOCIATION OF PENNSYLVANIA.

THE PENNSYLVANIA HARDWARE INSURANCE COMPANY completed its second year with the beginning of the present month, and celebrates the event by issuing a circular the burden of which is that now "Membership Is a Privilege." The statement shows over \$850,000 insurance in force and about \$11,000 cash in

NEW ENGLAND HARDWARE DEALERS' ASSOCIATION.

THE NEW ENGLAND HARDWARE DEALERS' ASSOCIATION held its October meeting at the rooms of the Boston Merchants' Association, Tuesday, October 25. It being the first meeting of the fall term, a special report was made by Secretary F. Alexander Chandler and Treasurer Henry M. Sanders, showing that the association has made a considerable increase since the reorganization last winter. Discussion of timely trade topics followed, together with the making of informal plans for the annual convention to be held in March. A

Form 21-2

Department <b>36</b>		Plant Investment				Machinery	
No. <b>639</b>		Name <b>Automatic Screw Machine</b>				Estimated Life <b>10 years</b>	
Made by or Purchased from <b>Auto Screw Mach Co.</b>		Date <b>1903</b>		Q.No. <b>1453</b>		Rate of Depreciation <b>10%</b>	
Date Installed <b>Oct 1 1903</b>		Original Cost \$ <b>450.00</b>		Ins. Cost \$ <b>23.00</b>		Total Cost \$ <b>473.00</b>	
Retirements				Depreciation			
Date	Order No.	Item	Value	Total	Date	Amount	Bal.
					1903		
					Oct 31	3.94	446.06
					Nov 30	3.94	442.12
					Dec 31	3.94	438.18
					1904		
					Jan 31	3.94	434.24
					Feb 29	3.94	430.30
					Mar 31	3.94	426.36
					Apr 30	3.94	422.42
					May 31	3.94	418.48
					0		

Fig. 9.—Another Machinery Card, Giving Record of Value of a Less Expensive Machine Than that Covered in Figs. 1 and 2.

bank and invested, with no liabilities. All the expenses of organization and incorporation, office furniture, registers, books and supplies have been paid off, and all losses paid promptly, yet the total cost to members has been only one-half as much as in stock companies, and of the amount so paid only about one-half has been needed to defray losses and expenses, the balance being carried to a surplus, or guaranty, fund. The guaranty fund is to be used in reducing the cost of insurance in any future years when the results obtained may be less favorable. The total losses and expenses of the company for the first year were \$2356.30, 30 per cent. of the amount of the deposits, and for the second year \$2489.53, less than 20 per cent. of the deposits; and as the deposits represent the cost of the same insurance in stock companies, the figures quoted are an excellent indication of the care that has been exercised in the selection of risks and in keeping down expenses.

The president of this company is C. H. Miller of Huntingdon, Pa., ex-vice-president of the National Retail

committee was appointed to arrange details for this convention, consisting of D. Fletcher Barber, Secretary F. Alexander Chandler, Treasurer H. B. Sanders and Calvin M. Nichols, all of Boston, and Bion C. Pierce of Taunton. President John H. Sayward of Haverhill and First Vice-President John B. Hunter of Boston were elected delegates to the Massachusetts Board of Trade, the former for one year, the latter for three years.

MORLEY-MURPHY HARDWARE COMPANY.

THE MORLEY-MURPHY HARDWARE COMPANY has purchased the buildings and entire stock of Gottfredson Brothers Hardware Company at Green Bay, Wis. The deal was consummated September 21 and the Morley-Murphy Hardware Company was incorporated and capitalized at \$200,000, starting in business October 1. The officers are R. C. Morley, president; Frank E. Murphy, vice-president; A. E. Winter, secretary, and H. H. Heinrichs, treasurer. The company will do an exclu-

1904											
COST OF MAINTENANCE											
Date	Order No.	Val. of Repairs	Date	Order No.	Val. of Repairs	Date	Order No.	Val. of Repairs	Date	Order No.	Remarks
Jan 5		1.0									
Feb 15		4.11									
May 11		2.7									

Reverse Side of Card Shown in Fig. 9.

Hardware Dealers' Association and president of the National Hardware Mutual Insurance Company, and the directors are men of prominence in the trade and in the Pennsylvania Retail Hardware Dealers' Association. The active management is in the hands of the president and the secretary, W. B. Simpson of Huntingdon, who is a practical insurance man. The company takes no premium note, but adheres strictly to the board rates in fixing the amount of deposit. Deposit is made when policy is issued to the same amount as one year's insurance would cost in a stock company, and after paying the necessary expenses and the losses incurred the saving is rebated to the policyholders. The dividends thus declared have not fallen below 40 per cent. each year.

sively wholesale business. Its buildings are admirably adapted for this purpose. Lake boats can land at the dock in the rear of the warehouse, and between the warehouse and the main building are railroad tracks.

The store of Hamp Williams at Hot Springs, Ark., was partly destroyed by fire on the 19th ult. The loss was \$6000, fully covered by insurance. The insurance matter was quickly adjusted and the proprietor was doing business as usual three days later. Mr. Williams is well known to the merchants of the State as the efficient president of the Arkansas Retail Hardware Dealers' Association.

## TRADE WINNING METHODS.

*This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### A BASSETT BOOKLET.

**T**HE JOHN E. BASSETT & CO., New Haven, Conn., which is the author of a good deal of very interesting and attractive advertising matter on behalf of its Hardware business, has just issued a booklet, entitled "On the Serving of Grub," a page from which, somewhat reduced, is reproduced herewith. The booklet is about 5 x 6 inches, and calls attention in an attractive



**A**ND THAT'S the reason, we suppose, why so many women express their satisfaction at our attempt to give them what they would otherwise be obliged to go to New York for—or go without. And the pleasant things they've said have induced us to go into this line to an even greater extent and we have made large additions to our stock of these goods and especially to our assortment of moulds which is now second to none in New England. We've also added a line of fireproof clay casseroles, egg dishes, custard cups and baking dishes which suggest appetizing things to a hungry man. We want you to see them.

way to its Kitchen Ware department, and also to its line of Silver Ware. Remarking that "although of no importance in the serving of grub the fire place is but a step removed from the dinner table, and both supply good cheer and warm the hearts of men," the firm also reminds the public that it carries a large variety of Fire Place Fittings, including Andirons, Fire Screens, Hearth Brushes, Fire Sets, &c.

### VARIOUS PRACTICAL SUGGESTIONS IN REGARD TO BUSINESS METHODS.

**T**HE following suggestions are taken from correspondence with retail Hardware merchants who have given special attention to effective methods of conducting their business in an enterprising and aggressive way. While the suggestions may not in all cases be followed closely, they will indicate methods deserving consideration and will, at least, remind merchants that they should be constantly on the lookout for new and improved means of bringing their goods to the attention of the public:

#### A HINT ABOUT PRINTED MATTER.

The closer a merchant can strike home with his advertising the better will be the result, and in no way can this be done better and with as little expense as with neat circulars and booklets. These may be sent as often as the merchant wishes, at regular or irregular intervals, but they should be mailed directly to customers and prospective buyers. The story of the booklet should be told in as few words as possible, in a plain, straightforward manner, omitting all high-sounding phrases, talking as if to the customer in person.

### ADVERTISING PRICES.

If you have reasonable prices on your wares don't fear your competitors. Display them! You make the pace and let them follow. If not convenient to price all, price, say, half of them, for the timid persons who would not likely enter to get prices. An advertised price of an article is considered by many a bargain, and bargain stores nowadays are what buyers are looking for.

#### Prices in the Show Window

### HELP THAT COSTS NOTHING.

Every package going out of the store should carry with it some message about the goods which may be found in the establishment. Manufacturers are only too willing to supply on request circulars and other printed matter relative to their products. I make it a point when consignments of certain goods are received unaccompanied by circulars to communicate with the manufacturers at once asking them to send circulars or leaflets for distribution in the store. In this way I am always plentifully supplied with literature of this sort, of which I make telling use. These circulars or leaflets are, of course, on receipt rubber stamped with my imprint. They also may be used to advantage for inclosing with bills and statements sent out. Many sales can be traced directly to these little helps, which cost the dealer practically nothing.

#### Get Circulars from Manufacturers

### A MERCHANT'S PRACTICAL HINT.

A clean window, showing new goods and staple goods, each article plainly priced and display changed at least once a week, will attract the attention of the public. We notice increased sales on the goods exhibited while they are thus thrust into the public eye. We endeavor to have a moving or live exhibit, operated by a mechanical device, every six or eight weeks.

#### Window Displays Increase Sales

### GOOD AND NOT COSTLY ADVERTISING.

In pushing the sale of Gasoline Stoves and Ovens last season I purchased a quantity of Asbestos Stove Mats, my store advertisement being printed on the mats. The Mats were distributed to every woman customer who visited the store, by whom they were greatly prized. The results of this advertising effort were very gratifying. I believe it pays to cultivate the trade of the fair sex, and that a satisfied woman customer is the best advertisement a Hardware store can have.

#### Cultivating Trade of Fair Sex

### LET THEM HAVE THEM.

Among a great many purchasers the idea prevails that samples displayed are your choicest goods. To a great extent they are right, as you dare not display defective or shoddy goods. Sell from your samples, and be careful to replace them with bright new goods.

#### Sell from Samples

### GIVE THOUGHT TO IT.

Window display is more to the merchant than an extra clerk, as it sells things a clerk would never think of mentioning or showing. The proprietor or manager of a store should supervise the display of goods in windows or otherwise. If he has no taste or bent for the work let him go about town, observe his competitors' methods in this regard, copy and improve them, and cultivate a taste for it. It pays.

Don't forget your sidewalk display. Crowd your front with season goods and staples. Pile things out. Don't appear dead. Show life and bustle.

#### Cultivate Taste for Display



### PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.*

**ANNUAL WIND CLOCK COMPANY, Middletown, Conn.:** Illustrated catalogue devoted to a line of Clocks which run one year on one winding, having no weights or batteries. The motive power is furnished by a spring a little larger than that used in an eight-day clock, combined with a new mechanical principle.

**AMERICAN NICKELOID & MFG. COMPANY, Peru, Ill.:** Price-list relating to Sheet Nickeloid, Copperoid, Brassoid and Zinc.

**THE COLUMBUS HANDLE & TOOL COMPANY, Columbus, Ind.:** Catalogue illustrating, with list prices, Logging Tools, Ice Tools, Linemen's Tools, Farming Tool Handles, &c.

**ROCK ISLAND PLOW COMPANY, Rock Island, Ill.:** Colored hanger illustrating the company's plant and referring to its Red, White and Blue line of Agricultural Implements.

**THE WAPAK HOLLOW WARE COMPANY, Wapakoneta, Ohio:** Catalogue of Hollow Ware, Sugar Kettles, Ventilator Grates, Lawn Vases and Furniture, &c. In the greeting to the trade the company states that it has enlarged its plant, installing the latest machinery, and more than doubling its facilities for grinding and polishing.

**THE NATIONAL SUPPLY COMPANY, Baltimore, Md.:** Illustrated catalogues devoted to Furniture Casters and to Bolts, Nuts, Washers, Rivets, &c.

**AMERICAN MFG. & NOVELTY COMPANY, Erie, Pa.:** Illustrated catalogue relating to Lawn Swings, Folding Lawn Settees, Extension, Sectional and Step Ladders, Scaffold Brackets, Ironing Tables, Wash Benches, Clothes Horses, Clothes Bars, Brush Holders, Ironing and Pastry Boards, &c.

**THE WHITMAN & BARNES MFG. COMPANY, Chicago, Ill.:** Diamond Haying Tools and Supplies, illustrated in a catalogue, include Hay Track Carriers, Hay Forks, Hay Sling Pulleys, Hay Fork Pulleys, Slings, &c.

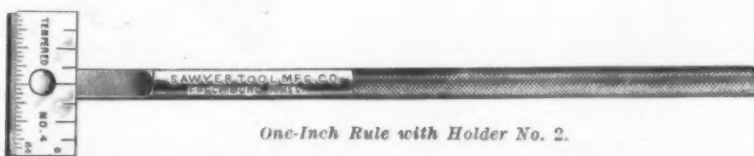
**W. C. HELLER & Co., Montclair, N. J.:** Mailing card illustrating and describing Heller's Standard Steel Hardware Shelf Boxes with oak fronts.

### ATLANTIC STAMPING COMPANY.

**A**TLANTIC STAMPING COMPANY, Rochester, N. Y., has just issued an attractive catalogue of nearly 100 pages relating to its products in Tin and Galvanized Ware. It illustrates Dippers and Cups, Liquid Measures, Funnels, Coffee Boilers, Dish Pans, Bread Pans, Pails, Packing Cans, Sprinkling Pots, Wash Boilers and Tubs, Oil and Garbage Cans, Toilet Ware, &c. The company expects to take possession of its new plant before the end of the year.

### One-Inch Rule with Holder No. 2.

The 1-inch rule illustrated herewith has for its principal use measuring in places where a longer rule cannot be used, as in holes and cavities. The rule may be swung

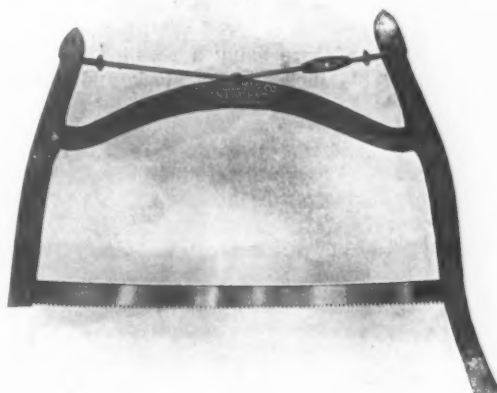


One-Inch Rule with Holder No. 2.

at any angle with the holder and will retain its position. It measures 5 inches over all. The rules are furnished in Nos. 1, 2, 4, 7, 8, 15 and 16 graduations, and are offered by Sawyer Tool Mfg. Company, Fitchburg, Mass.

### A New Buck Saw.

The Simonds Mfg. Company, Fitchburg, Mass., is putting on the market a new buck saw as shown herewith, a patent on which was recently granted. The



A New Buck Saw.

feature of the saw is the method of setting the cross bar into the frame, the bearing being on an arc to insure a perfect bearing surface when the rod is tightened by means of the turnbuckle. This makes it easy to procure and maintain a rigid saw blade. The blade is furnished in 30 and 32 inch lengths.

### Nail Sets No. 1522.

Sawyer Tool Mfg. Company, Fitchburg, Mass., is offering the new pattern of nail sets shown in the accompanying cut, which are made of the same steel and treated by the same process as the company's nail sets No. 152, the only variation being in the diameter of



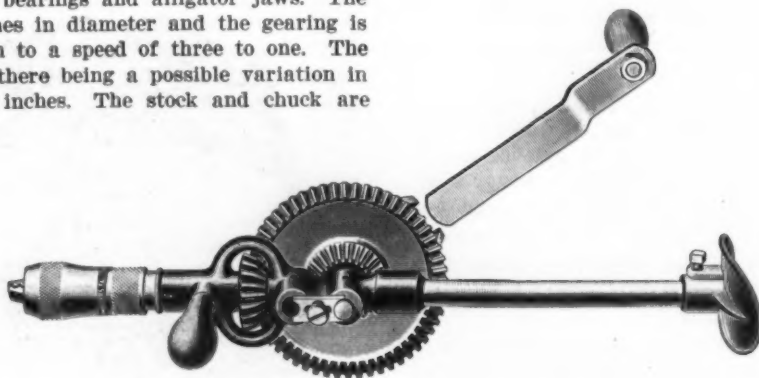
Nail Sets No. 1522.

the stock used in their construction. These are put on the market to meet the demand for a popular priced set. The stock in the two smaller sizes is  $\frac{1}{4}$  inch in diameter, and in the two larger sizes 5-16 inch. The cut shows the excellent method of displaying the goods in the store. Every customer is furnished an ample supply of these

nice finished black walnut boxes, with the company's nickel plated plates guaranteeing the quality of the sets. The sets are made in four sized points: No. 1, 0.055; No. 2, 0.078; No. 3, 0.115, and No. 4, 0.130 inch.

**Breast Drill No. 19.**

Millers Falls Company, 28 Warren street, New York, has just put on the market breast drill No. 19, as here illustrated. Although made somewhat along the lines of its No. 12 breast drill, it can be sold for a less price. The No. 19 has ball bearings and alligator jaws. The drive wheel is 5 inches in diameter and the gearing is changeable from even to a speed of three to one. The crank is adjustable, there being a possible variation in crank length of  $3\frac{1}{2}$  inches. The stock and chuck are



Breast Drill No. 19.

polished, the hub casting painted black, and the gear and breast plate are aluminized.

**Lawson Matchless Window Lock**

We illustrate herewith a new ventilating window catch manufactured by the Lawson Mfg. Company, 38 Dearborn street, Chicago. This device consists of two parts, both of which are stamped from sheet steel. The device consists of a slide attached to the upper sash of the window and a box containing a spring controlled bolt secured to the top of the lower sash. The slide attached to the upper sash has a groove in it and the bolt secured to the lower sash slides up and down in this groove, the mechanism permitting the raising of the lower sash or the lowering of the upper sash 6 inches, or permits the lower sash to be raised and the upper one lowered a maximum of 3 inches each at the same time. At the bot-



Fig. 1—Front View.

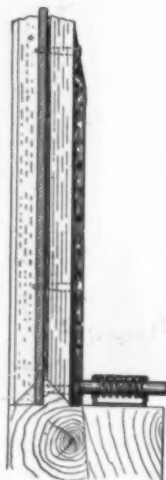


Fig. 2.—Sectional View.

Lawson Matchless Window Lock.

tom of the slide, attached to the upper sash, is a tongue stamped from the same sheet from which the slide is formed. This tongue performs the double service of holding the end of the bolt away from the wood and preventing a person on the outside boring through the sash and forcing the bolt out of its position. On the end of the bolt is a button shaped head, which is considerably wider than the groove in the slide. At a point about 2 inches above the window sash the groove is widened sufficiently to admit the entrance of this button. This entrance point is purposely placed as high as it is so as to permit the operator to use both hands in raising the sash that dis-

tance, as it frequently happens that the lower sash sticks at the sill and requires considerable force to raise it. Once the bolt is permitted to enter this slide at its wider opening the window moves upward and downward freely. When it is desired to raise the window above the 6 inches

of the lock the operator simply pulls on the inner end of the spring bolt, lifting the bolt out of its socket at the opening and permitting the button head of the bolt to slide freely over the outside of the groove and off the tapering top of the slide. The device is made of 16-gauge sheet steel, finished in various colors to match prevailing types of wood work. The makers have given the name Matchless to this window catch, in harmony with their Matchless floor hinges, which are well known to the trade.

**Hubbard Metallic Door Bumpers.**

The Ashtabula Mfg. Company, Ashtabula, Ohio, New York headquarters in charge of J. N. Limeburner, 84-86 Chambers street, has recently put on the market Hub-



Fig. 1.—Hubbard's Patent Metallic Door Check or Floor Knob.

bard's door check and base knob, as illustrated herewith. Fig. 1 is an actual size representation of the Hubbard metallic door check or bumper, shown as screwed to the floor, for doors that open only part way or against furni-

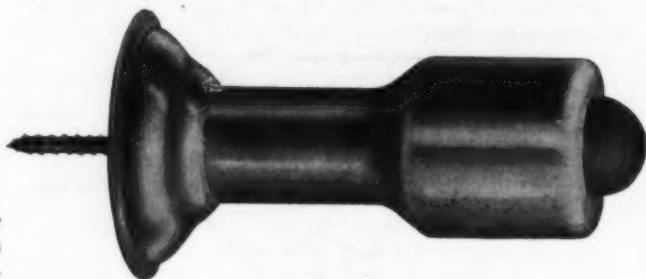


Fig. 1.—Hubbard's Door or Base Knob to Screw.

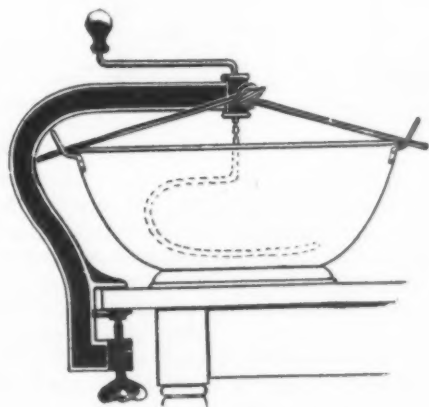
ture. It is made variously of Nicobar steel, bronze metal and brass and can be furnished in any of 104 different finishes. Fig. 2 illustrates the Hubbard metallic door stop or base knob, also full size. The screws are  $3\frac{1}{2}$  inches long, extending entire length of base knob and into the wood, and so engaged with the knob as to form



a wrench inside, enabling it to be screwed into wood base with the hand. The rubber tip is of best quality and vulcanized to the head of the screw. The same description as to materials and finishes given above applies to this bumper. Both articles are packed in quarter gross boxes and cases of ten gross.

### Improved Easy Dough Mixer.

The R. W. Jamieson Company, 50 Warren street, New York, is manufacturing an improved form of its Easy dough mixer, as here illustrated. As now offered it has two straight movable rods of galvanized iron, No. 5 gauge, each about 11 inches long, controlled from the center by a thumb nut. The rods when passed through handles of bread pan and secured keep the pan rigid while the mass of ingredients is being easily and quickly mixed by revolving the curved tinned rod seen in outline. Another new feature is the change in clamping device, so as not to mar surface of kitchen table. The lower thumb

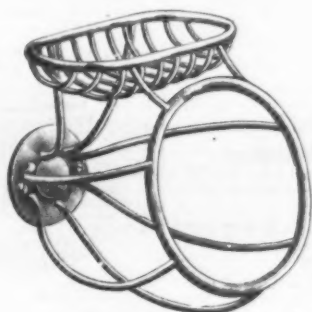


Improved Easy Dough Mixer.

nut is provided with a plate having a ridge at the top, which works up and down in the supporting arm, the ridge on the under portion of the upper clamp being omitted so as to prevent injuring top of table. This mixer is designed to mix thoroughly and expeditiously any dough or mass for bread, cake, rolls, &c., much more uniformly than can be done with the hands, and in a modern, sanitary and cleanly manner. The capacity of the mixer is from two to eight loaves of bread at a time.

### Sponge and Soap Holder.

Searls Mfg. Company, Newark, N. J., for which Fred-eric Klages, 127 Duane street, New York, is sole agent, has added to an already diversified line of bathroom specialties the combination sponge and soap holder here



Sponge and Soap Holder.

illustrated. It is made of brass wire, polished and nickel-plated, and is designed for use against a wall or wainscoting. The sponge holder is 6 inches deep and 5½ inches in diameter; the soap holder above it, 5½ x 3 inches.

### The Chicago Automatic Temperature Regulator.

A new electrical thermostat and automatic temperature regulator, sold by the Chicago Heat Regulator Company, 40 Dearborn street, Chicago, is shown in the illustrations given herewith. The set consists of a thermostat and a time set device. The thermostat shown in Fig. 1 consists of a polished black gutta percha barrel or cylinder, inside of which is a steel rod which holds the two heads together, parallel to which lies a tongue made of zinc and steel. This tongue is in the shape of a thin strip, one face being steel and one zinc. The unequal contraction of the zinc and steel, due to changes in temperature, causes this tongue to bow or bend slightly to the right or to the left as the temperature rises or falls. The foot of the tongue is suspended midway between two electrical contact points, and these points are regulated by screw threads, so that their distance from the tongue can be made to vary so as to make the instrument sensitive to ½ degree if desirable. The gutta percha barrel

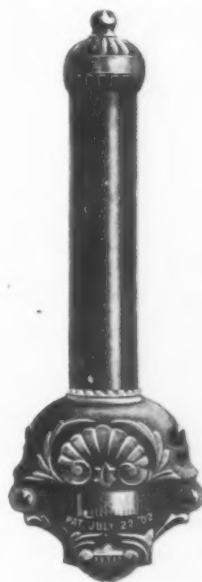


Fig. 1.—The Thermostat.

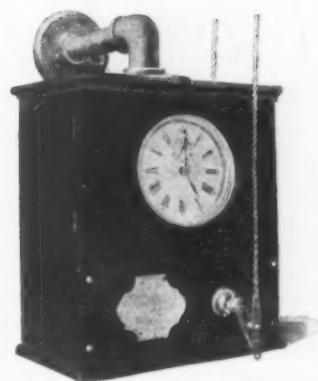


Fig. 2.—Time Set Attachment.

### The Chicago Automatic Temperature Regulator.

of the thermostat serves the same purpose as the bimetal tongue, giving simply an additional temperature regulation. As the heat varies the barrel expands or contracts, and the variations in length operate on the tongue, moving its point to the right or left against the contact points, which are connected by wires with a dry battery and with a small motor. When the heat falls below a certain set standard the tongue is brought automatically in contact with the left hand point of contact, and a circuit is established which throws the motor into operation. The motor winds the damper chains on a drum, raising and opening the dampers at the front and back of the furnace to their full height and holding them locked in that position. Similarly, when the heat reaches a degree or two above the set standard, contact is made with the other point, which establishes a circuit that sets the motor in the opposite direction, releasing the chains and permitting the dampers to fall of their own weight, or, when necessary, by such weights as may be added to them. The other feature of the mechanism, the time set attachment, shown in Fig. 2, consists of an ordinary alarm clock set inside the door of the motor box. The operator opens the door of the box, winds his alarm clock and sets it to the desired hour and minute, and when that time is reached the turning of the alarm throws into contact the battery which operates the motor which controls the chains to raise and open the dampers. The alarm bell, of course, is removed from the clock.

E. S. DUQUETTE, formerly with Cole Brothers, Stove manufacturers, Chicago, has removed with his family to Council Bluffs, Iowa, where he has purchased an interest in the P. C. De Vol Hardware Company.

### Hay Rack Fixtures and Clamps.

The hay rack fixtures shown in Fig. 1 are designed to obviate the use of bolts and boring holes in timbers when building hay racks. The main frame of the fixtures is made of 7-16-inch round steel, held in position at the center by a malleable iron saddle with heavy flanged edges. The flanges engage the upper and lower edges of the sill and cross beam, the design being to hold them securely in position and prevent their warping or sliding in any direction. The saddle, it is explained, is a special patented device that holds the timbers in position without the objectionable feature of having a rough metal plate placed between the timbers, which not only causes chafing but in many cases throws the

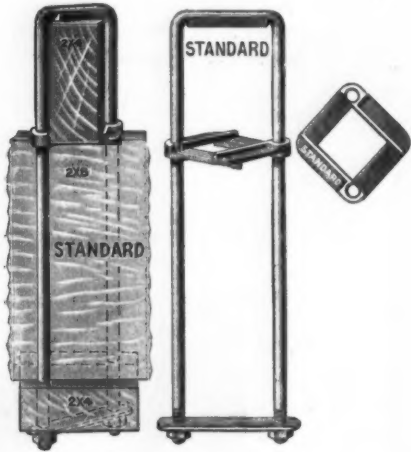


Fig. 1.—Standard Hay Rack Fixtures.

timbers out of line. The fixtures are fitted with a flat steel surface that comes in contact with the top edge of the cross beam, and with a substantial steel plate on the under side of the lower cross piece, which not only acts as a washer, but serves to prevent the cross piece being split when subjected to a strain. The fixtures are made in two sizes, 14 and 16 inch. They are packed one set complete in a wooden box. The hay rack clamps, shown in Fig. 2, which are furnished complete put up in sets of eight clamps, making a complete outfit, are referred to as all the attachments necessary to enable a farmer to

build a hay rack without boring a hole in any of the timbers. The clamps are made with a malleable plate placed between the main sill and the cross beam. The plate is fitted with heavy flanges that support the sill and cross beam on each side to hold them firmly in position. The clamps are made of 7-16-inch wrought steel. The following are among the special advantages

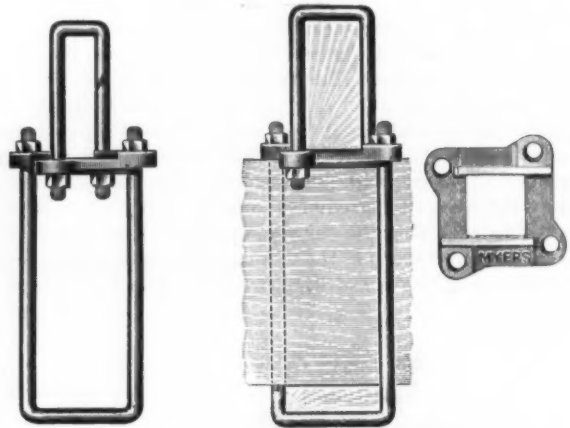


Fig. 2.—Myers Hay Rack Clamps.

claimed for the clamps: That the main sills are clamped to the lower cross tie independent of the clamp that holds the cross beam above the sill; that the upper cross beam is also attached directly to the intermediate plate, the advantage of this arrangement being that either beam or main sill can be removed or tightened independent of the other and that by this arrangement there are no long bolt ends exposed either above or below the beams of the hay rack. The fixtures and clamps are put on the market by F. E. Myers & Bro., Ashland, Ohio.

G. W. FULLER, secretary and manager of the John Deere Plow Company, Kansas City, Mo., resigned his position with that company November 1. Mr. Fuller had been in the employ of the company for over 34 years, beginning as traveling salesman for what was up until 1899 known as Deere, Mansur & Co. He expects to leave the Implement business entirely and devote his time to other interests.

### PAINTS, OILS AND COLORS

#### White Lead, Zinc, &c.—

Lead, English white, in Oil... 9¢ @ 9¢  
Lead, American white, in Oil:  
Lots of 500 lb or over... 6¢  
Lots less than 500 lb... 7¢  
In Barrels... 6¢  
Lead, White, in oil, 25 lb tin  
pails, add to keg price... 1/2¢  
Lead, White, in oil, 12 1/2 lb tin  
pails, add to keg price... 1¢  
Lead, White, in oil, 1 to 5 lb  
ass'ted tins, add to keg price... 1 1/2¢  
Lead, American, Terms: For lots 12  
tons and over 1/4¢ rebate; and 2% for  
cash if paid in 15 days from date of  
invoice; for lots of 500 lbs. and over  
2% for cash if paid in 15 days from  
date of invoice, for lots of less than  
500 lbs. net.  
Lead, White, Dry in bbls... 6¢  
Zinc, American, dry... 1/2¢ @ 4 1/2¢  
Zinc, French:  
Paris, Red Seal, dry... 7¢  
Paris, Green Seal, dry... 9¢  
Antwerp, Red Seal, dry... 6¢  
Antwerp, Green Seal, dry... 8¢  
Zinc, V. M. French, in Poppy Oil:  
Green Seal:  
Lots of 1 ton and over... 11 1/4¢ @ 11 1/4¢  
Lots of less than 1 ton... 10 1/4¢ @ 12¢  
Zinc, V. M. French, in Poppy Oil:  
Red Seal:  
Lots of 1 ton and over... 10¢ @ 10 1/4¢  
Lots of less than 1 ton... 10 1/4¢ @ 10 1/4¢  
Discounts.—French Zinc.—Discounts  
to buyers of 10 bbl. lots of one or mixed  
grades, 1%; 25 bbls., 2%; 50 bbls., 4%

#### Dry Colors—

Black, Carbon... 5¢ @ 10¢  
Black, Drop, Amer... 4¢ @ 6¢  
Black, Drop, Eng... 5¢ @ 15¢  
Black, Iron... 16¢ @ 20¢  
Lamp, Com... 4 1/2¢ @ 4¢  
Blue, Celestial... 27¢ @ 32¢  
Blue, Chinese... 27¢ @ 32¢  
Blue, Prussian... 27¢ @ 30¢  
Blue, Ultramarine... 4 1/2¢ @ 15¢  
Brown, Spanish... 1 1/2¢ @ 1¢  
Carmine, No. 10... 1 1/2¢ @ 3 1/2¢ @ 4.00  
Green, Chrome, ordinary... 3 1/2¢ @ 6¢

Green, Chrome, pure... 17¢ @ 25¢  
Lead, Red, bbls., 1/2 bbls. and kegs:  
Lots 500 lb or over... 6 1/2¢  
Lots less than 500 lb... 7¢  
Litharge, bbls., 1/2 bbls. and kegs:  
Lots 500 lb or over... 6 1/2¢  
Lots less than 500 lb... 7¢  
Ocher, American... 1/2 ton \$8.50 @ 16.00  
Ocher, American Golden... 2 1/2¢ @ 3 1/2¢  
Ocher, French... 1 1/2¢ @ 2 1/2¢  
Ocher, Foreign Golden... 3¢ @ 4¢  
Orange Mineral, English... 8 1/4¢ @ 10 1/4¢  
Orange Mineral, French... 10 1/4¢ @ 11 1/4¢  
Orange Mineral, German... 7¢ @ 10¢  
Orange Mineral, American... 8¢ @ 8 1/4¢  
Red, Indian, English... 4 1/2¢ @ 8 1/2¢  
Red, Indian, American... 3¢ @ 3 1/4¢  
Red, Turkey, English... 4¢ @ 10¢  
Red, Tuscan, English... 7¢ @ 10¢  
Red, Venetian, Amer... 1/2 ton \$0.50 @ 1.25  
Red Venetian, English... 100 lb \$1.15 @ 1.75  
Sienna, Italian, Burnt and  
Powdered... 1/2 lb 3¢ @ 9 1/2¢  
Sienna, Ital., Raw, Powd... 3¢ @ 6 1/2¢  
Sienna, American, Raw... 1 1/2¢ @ 2¢  
Powdered... 1/2 lb 1 1/4¢ @ 2¢  
Talc, French... 1/2 lb 1¢ @ 1 1/4¢  
Talc, American... 75¢ @ 1.25¢  
Terra Alba, French... 1/2 ton \$0.90 @ 1.00  
Terra Alba, English... 1.00 @ 1.00  
Terra Alba, American No. 1... 40¢ @ 50¢  
Terra Alba, American No. 2... 45¢ @ 50¢  
Umber, T'key, Bnt. & Pow... 1/2 lb 2 1/4¢ @ 3 1/4¢  
Umber, Turkey, Raw & Pow... 2 1/4¢ @ 3 1/4¢  
Umber, Burnt, Amer... 12¢ @ 2¢  
Umber, Raw, Amer... 15¢ @ 2¢  
Yellow, Chrome... 11¢ @ 14¢  
Vermilion, American Lead... 30¢ @ 35¢  
Vermilion, Quicksilver, bulk... 65¢  
Vermilion, Quicksilver, bags... 66¢  
Vermilion, English, Import... 75¢ @ 80¢  
Vermilion, Chinese... \$0.90 @ 1.00

#### Colors in Oil—

Black, Lampblack... 12¢ @ 14¢  
Blue, Chinese... 24¢ @ 26¢  
Blue, Prussian... 32¢ @ 36¢  
Blue, Ultramarine... 13¢ @ 16¢  
Brown, Vandyke... 11¢ @ 14¢  
Green, Chrome... 16¢ @ 15¢  
Green, Paris... 24¢ @ 24¢

Sienna, Raw... 12¢ @ 15¢  
Sienna, Burnt... 12¢ @ 15¢  
Umber, Raw... 11¢ @ 14¢  
Umber, Burnt... 11¢ @ 14¢

#### Miscellaneous—

Barytes, White, Foreign... 1/2 ton \$17.50 @ 20.00  
Barytes Amer. floated... 16.00 @ 17.00  
Barytes, Crude, No. 1... 10.00 @ 11.00  
Chalk, in bulk... 1/2 ton 3.00 @ 3.25  
Chalk, in bbls... 100 lb 2¢ @ 35¢  
China Clay, English... 1/2 ton 12.00 @ 17.00  
Cobalt, Oxide... 100 lb 2.50 @ 2.50  
Whiting, Common... 100 lb 45¢ @ 48¢  
Whiting, Gilders... 55¢ @ 57¢  
Whiting, Extra Gilders... 58¢ @ 60¢

#### Putty—

In bladders... 1 1/4¢ @ 2¢  
In bulk... 1¢ @ 1 1/4¢  
In cans, 1 lb to 5 lb... 2 1/4¢ @ 4¢  
In cans, 12 1/2 to 25 lb... 1 1/4¢ @ 2¢

#### Spirits Turpentine—

In oil bbls... 54 1/2¢ @ 55¢  
In machine bbls... 55¢ @ 55 1/2¢

#### Glue—

Cabinet... 1/2 lb 11¢ @ 15¢  
Common Bone... 6¢ @ 8¢  
Extra White... 18¢ @ 24¢  
Foot Stock, White... 11¢ @ 14¢  
Foot Stock, Brown... 7¢ @ 10¢  
German Hides... 12¢ @ 18¢  
French... 10¢ @ 16¢  
Irish... 15¢ @ 16¢  
Low Grade... 8¢ @ 11¢  
Medium White... 14¢ @ 17¢

#### Gum Shellac—

Bleached, Commercial... Cts. 42¢ @ 44¢  
Bone Dried... 53¢ @ 55¢  
Button... 59¢ @ 60¢  
Diamond I... 59¢ @ 60¢  
Fine Orange... 52¢ @ 54¢  
A. C. Garnet... 45¢ @ 48¢  
D. C. Garnet... 1.00 @ 1.00  
Octagon B... 52¢ @ 54¢  
T. N... 48¢ @ 50¢  
V. S. O... 60¢ @ 60¢

#### Animal, Fish and Vegetable Oils—

Linseed, City, raw... 1/2 gal. 41¢ @ 42¢  
Linseed, City, boiled... 43¢ @ 44¢  
Linseed, State and West'n, raw... 38¢ @ 39¢  
Linseed, raw Calcutta seed... 55¢ @ 55¢  
Lard, Prime, Winter... 58¢ @ 60¢  
Lard, Extra No. 1... 48¢ @ 49¢  
Lard, No. 2... 36¢ @ 38¢  
Cotton-seed, Crude, f.o.b. mills... 19 1/2¢ @ 20¢  
Cotton-seed, Summer Yellow... 26 1/2¢ @ 27 1/2¢  
Cotton-seed, Summer Yellow... 26¢ @ 27 1/2¢  
off grades... 25¢ @ 27 1/2¢  
Sperm, Crude... 50¢ @ 50¢  
Sperm, Natural Spring... 53¢ @ 55¢  
Sperm, Bleached Spring... 57¢ @ 58¢  
Sperm, Natural Winter... 55¢ @ 56¢  
Sperm, Bleached Winter... 58¢ @ 59¢  
Tallow, Prime... 48¢ @ 50¢  
Whale, Crude... 40¢ @ 42¢  
Whale, Natural Winter... 43¢ @ 44¢  
Whale, Bleached Winter... 45¢ @ 46¢  
Menhaden, Brown, Strained... 27¢ @ 28¢  
Menhaden, Light, Strained... 28¢ @ 29¢  
Menhaden, Bleached Winter... 30¢ @ 32¢  
Menhaden, Ex-Bld, Winter... 32¢ @ 33¢  
Menhaden, Southern... 33¢ @ 34¢  
Cocoanut, Ceylon... 7 1/4¢ @ 7 1/4¢  
Cod, Domestic... 34¢ @ 44¢  
Cod, Newfoundland... 39¢ @ 41¢  
Red Elaine... 28¢ @ 30¢  
Red Saponified... 1/2 lb 4 1/4¢ @ 4 1/4¢  
Olive, Italian, bbls... 53¢ @ 56¢  
Neatsfoot, prime... 50¢ @ 51¢  
Palm, prime, Lagos... 1/2 lb 5 1/2¢ @ 6 1/4¢

#### Mineral Oils—

Black, 20 gravity, 25 @ 30 cold  
test... 11¢ @ 12¢  
Black, 20 gravity, 15 cold test... 12¢ @ 13¢  
Black, Summer... 11¢ @ 12¢  
Cylinder, light filtered... 18 1/2¢ @ 19 1/2¢  
Cylinder, dark filtered... 16 1/2¢ @ 17 1/2¢  
Paraffine, 903-907 gravity... 13¢ @ 13 1/4¢  
Paraffine, 903 gravity... 12¢ @ 12 1/2¢  
Paraffine, 883 gravity... 9 1/4¢ @ 10¢  
Paraffine, red... 12¢ @ 13 1/4¢  
In small lots 1/4¢ advance.



# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{3}$  @ 33 $\frac{1}{3}$  & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{3}$  per cent. discount to 33 $\frac{1}{3}$  and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33 $\frac{1}{3}$ %  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....35%

**Ammunition—**See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils..... $\frac{1}{2}$  lb 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ %  
Hay-Budden, Wrought.....9@9 $\frac{1}{2}$ %  
Horseshoe brand, Wrought.....9@9 $\frac{1}{2}$ %  
Trenton..... $\frac{1}{2}$  lb 9@9 $\frac{1}{2}$ %

## Imported—

Peter Wright & Sons..... $\frac{1}{2}$  lb 10 $\frac{1}{2}$ %

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15&10%

## Apple Parers—See Parers,

Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros. Co.....30&10%  
Livingston Nail Co.....33 $\frac{1}{3}$ %

## Augers and Bits—

Com. Double Spur.....75@75&10%

Boring Mach. Augers.....70&10&15%

Car Bits, 12-in. twist.....60@60&10%

Jennings' Pattern.....60&10&10&10%

Ford's Auger and Car Bits.....40&5%

Forstner Pat. Auger Bits.....25%

C. E. Jennings & Co.:  
No. 10 ext. lip. R. Jennings' list.....25%

No. 30, R. Jennings' list.....40&1 $\frac{1}{2}$ %

Russell Jennings' Pattern.....25&10&10%

L'Hommiedieu Car Bits.....15%

Mayhew's Countersink Bits.....45%

Millers Falls.....50&10&1 $\frac{1}{2}$ %

Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%

Pugh's Black.....20%

Pugh's Jennings' Pattern.....35%

Snell's Auger Bits.....60%

Snell's Bell Hangers' Bits.....60%

Snell's Car Bits, 12-in. twist.....60&10%

Wright's Jennings' Bits (R. Jennings' list).....50%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, \$18; large, \$26.....50&10%

Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. \$26.....50&10%

No. 2, \$18.....50&10%

Ford's, Clark's Pattern.....50&10&60%

C. E. Jennings & Co., Steer's Pat.....25%

G. W. Jennings.....60%

## Gimlet Bits—

Common Dble. Cut, gro. \$3.00@3.25

German Pattern.....gro. \$4.50@4.75

## Hollow Augers—

Bonney Pat., per doz. \$10.00@11.00

Ames.....25&10%

New Patent.....25&10%

Universal.....20%

Wood's Universal.....25%

## Ship Augers and Bits—

Ford's.....40%

C. E. Jennings & Co.:  
L'Hommiedieu's.....15%

Watrous'.....35&5%

Ohio Tool Co.'s.....40%

Snell's.....40%

## Awl Hafts—See Hafts, Awl.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00

Unhdded, Shldered.....gro. \$3.63@3.66

Unhanded, Patent.....gro. \$6.60@7.04

Peg Awls:  
Unhanded, Patent.....gro. \$1@1 $\frac{1}{4}$

Unhdded, Shldered.....gro. \$5@7.06

Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00

Handled, Socket.....gro. \$11.50@12.00

Hurwood.....40%

## Awl and Tool Sets—See

Sets, Awl and Tool.

## Axes—

Single Bit, base weights. (up to 3 $\frac{1}{2}$  lb.)

First Quality.....\$5.50

Second Quality.....\$5.75

NOTE.—Heavier Weights add Extras as per regular schedule.

## Axle Grease—

See Grease, Axle

## Axles—

Concord, Loose Collar.....\$4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %

Concord, Solid Collar.....\$4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %

No. 1 $\frac{1}{2}$  Com.....3 $\frac{1}{2}$ @3 $\frac{1}{2}$ %

No. 1 $\frac{1}{2}$  Com, New Style.....3 $\frac{1}{2}$ @3 $\frac{1}{2}$ %

No. 2 Solid Collar.....\$4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %

Nos. 7, 8, 11 and 12.....75@75&5%

Nos. 13 to 14.....70&10@75&5%

Nos. 15 to 18.....60&10@60&10%

Nos. 19 to 22.....70&10@75%

Common and Concord, not turned lb. \$4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %

Common and Concord, turned lb. 5@5 $\frac{1}{2}$ %

Half Patent.....lb. 9@9 $\frac{1}{2}$ %

## Boxes, Axle—

Common and Concord, not turned lb. \$4 $\frac{1}{2}$ @4 $\frac{1}{2}$ %

Common and Concord, turned lb. 5@5 $\frac{1}{2}$ %

Half Patent.....lb. 9@9 $\frac{1}{2}$ %

## Bait— Fishing—

Hendryx:  
A Bait.....20%

B Bait.....25%

Competitor Bait.....20&5%

## Balances— Sash—

Caldwell new list.....50%

Pullman.....50&10@60%

## Spring—

Spring Balances.....60@60&5%

Chatillon's:  
Light-Spg. Balances.....40&10%

Straight Balances.....40%

Circle Balances.....50%

Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars— Crow—

Steel Crowbars, 10 to 40 lb. per lb. 2 $\frac{1}{2}$ @2 $\frac{1}{2}$ %

## Towel

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$  gro. \$8.50

## Beams, Scale—

Scale Beams.....40&10@50%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$0.85;

Tinned.....\$1.00

No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10;

Tinned.....\$1.20

No. 10 Wire Galvanized.....\$1.75

Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  gro. \$7.80

No. 2 Buffalo..... $\frac{1}{2}$  gro. \$9.00

No. 3 Perfection Dust..... $\frac{1}{2}$  gro. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, No. A, Japanned..... $\frac{1}{2}$  doz. \$1.20

Holt, No. B, Japanned..... $\frac{1}{2}$  doz. \$1.50

Holt, No. C, Japanned..... $\frac{1}{2}$  doz. \$2.00

Holt, No. 2, Tinned..... $\frac{1}{2}$  doz. \$2.25

Lyon, No. 2, Japanned..... $\frac{1}{2}$  doz. \$1.25

Lyon, No. 3, Japanned..... $\frac{1}{2}$  doz. \$1.50

Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$6.00

No. 75 Improved Dover.....\$8.50

No. 100 Improved Dover.....\$7.00

No. 102 Improved Dover, Tin'd.....\$8.50

No. 150 Improved Dover, Hotel.....\$15.00

No. 152 Imp'd Dover, Hotel, T'd.....\$17.00

No. 200 Imp'd Dover Tumbler.....\$8.50

No. 202 Imp'd Dover Tumbler, T'd.....\$9.50

No. 300 Imp'd Dover Mammoth, doz. \$25.00

Western W. G. Co., Buffalo.....\$7.00

Wonder (S. S. & Co.)  $\frac{1}{2}$  gro. net, \$6.00

## Bellows—

Blacksmith, Standard List.....60&10@70&10%

## Blacksmiths'—

Inch. 30 32 34 36 38 40

Each \$3.25 3.50 4.00 4.50 5.00 5.75

Extra Length:  
Each \$3.75 4.25 4.75 5.25 6.00 7.00

## Molders—

Inch. 10 12 14

Doz. \$8.50 10.00 13.00

## Hand—

Inch. 6 7 8 9 10

Doz. \$4.25 4.50 5.00 6.50 7.75

## Bells— Cow—

Ordinary goods.....75&5@75&10%

High grade.....70&10@70&10&5%

Jersey.....75&10%

Texas Star.....50%

## Door—

Abbe's Gong.....45%

Burton Gong.....50%

Home, R. & E. Mfg. Co.'s.....55&10%

Lever and Pull, Sargent's.....60&10&10%

Trip Gong.....50&10@50&10&5%

Yankee Gong.....55%

## Hand—

Hand Bells, Polished, Brass.....60&5@60&10&5%

White Metal.....60%

Nickel Plated.....50&10@50&10&5%

Russia.....60@60&7 $\frac{1}{2}$ %

Cone's Globe Hand Bells.....33 $\frac{1}{3}$ @35%

Silver Chime.....33 $\frac{1}{3}$ @35%

## Miscellaneous—

Farm Bells.....lb. 2 $\frac{1}{4}$ %

Steel Alloy Church and School.....50&10&50&60&5%

American Tube & Stamping Co. Gongs.....75%

Table Call Bells.....50@50&10%

## Belting— Leather—

Extra Heavy, Short Lap.....60@60&5%

Regular Short Lap.....60&10@60&10&10%

Standard.....70&10@70&5%

Light Standard.....70&10%

Cut Leather Lacing.....60&10%

Leather Lacing Sides, per sq. ft. 18¢

## Rubber—

Agricultural (Low Grade).....75@75&5%

Common Standard.....70@70&10%

Standard.....65&70%

Extra.....60&5@60&10%

High Grade.....50&5@50&10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....40%

Green River Tire Benders and Upsetters.....20%

Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25;

No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

## Bicycle Goods—

John S. Leng's Son's 1902 list:  
Chain.....50%

Parts.....50%

Spokes.....50%

Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks— Tackle—

Common Wooden.....70&10@75&5%

Hartz St. Tackle Blocks.....50&50&5%

Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%

Lane's Patent Automatic Lock and Juniors Novelty, Mal. Iron.....50&10%

Stowell's Novelty, Mal. Iron.....50&10%

Stowell's Self Loading.....60%

See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....30&19@40&10%

## Boards, Wash—

See Washboards.

**Calipers—See Compasses.****Calks, Toe and Heel—**

Blunt, 1 prong.....	per lb. 1.45	1.45
Sharp, 1 prong.....	per lb. 1.45	1.45
Gautier, Blunt.....	per lb. 1.45	1.45
Gautier, Sharp.....	per lb. 1.45	1.45
Perkins', Blunt Toe.....	per lb. 1.45	1.45
Perkins', Sharp Toe.....	per lb. 1.45	1.45

**Can Openers—**

See Openers, Can.

**Cans, Milk—**

Illinois Pattern.....	5	8	10 gal.
New York Pattern.....	1.50	2.20	2.45 each.
Baltimore Pattern.....	1.50	2.20	2.45 each.
Dubuque.....	1.35	1.60	1.75 each.

**Cans, Oil—**

Buffalo Family Oil Cans:			
3	5	10 gal.	
\$48.00	60.00	129.50	gro., net.

**Caps, Percussion—**

Eley's E. B.....	52	55	¢
G. D.....	per M	140	12
F. L.....	per M	140	12
G. E.....	per M	140	12
Musket.....	per M	62	63

**Primers—**

Berdan Primers, \$2 per M.	20	65	%
B. L. Caps (Sturtevant Shells)	22	per M.	20
All other primers per M.	1.52	1.60	

**Cartridges—**

Blank Cartridges:			
32 C. F., \$5.50.....	10	45	%
38 C. F., \$7.00.....	10	45	%
22 cal. Rim, \$1.50.....	10	45	%
32 cal. Rim, \$2.75.....	10	45	%
B. B. Caps, Con. Ball, Sued. \$1.90	10	45	%
B. B. Caps, Round Ball.....	10	45	%
Central Fire.....	25		
Target and Sporting Rifle.....	15	65	%
Primed Shells and Bullets.....	15	65	%
Rim Fire, Sporting.....	30		
Rim Fire, Military.....	15	65	%

**Castors—**

Bed.....	70	70	10
Plate.....	60	10	60
Philadelphia.....	75	75	10
Acme, Ball Bearing.....	33		
Boss.....	70	10	
Boss Anti-Friction.....	70	10	
Gem (Roller Bearing).....	50		
Martin's Patent (Phoenix).....	45		
Standard Ball Bearing.....	45		
Tucker's Patent low list.....	30		
Yale (Double Wheel) low list.....	50		

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Straight Link:			
3-16 3/4 5-16 1/2 7-16 3/4 9-16	1.15	1.35	3.30 3.50 3.15
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50	1.15	1.35	3.30 3.50 3.15
German Coil.....	60	10	10

**Halters and Ties—**

Halter Chains.....	60	10	60
German Pattern Halter Chains,	1st July 24, '97.....	60	10
Cow Ties.....	60	10	60

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.			
6 1/2-6 3/4, Straight, with ring.....	23	50	
6 1/2-6 3/4, Straight, with ring.....	23	50	
6 1/2-6 3/4, Straight, with ring.....	23	50	
6 1/2-6 3/4, Straight, with ring.....	23	50	
NOTE—Add 30¢ per pair for Hooks.			
Twist Traces 20¢ per pair higher than			
Straight Link.....			
Trace, Wagon and Fancy			
Chains.....	60	10	60

**Miscellaneous—**

Jack Chain, list July 10, '93:			
Iron.....	60	10	60
Brass.....	60	10	60
Safety Chain.....	75	75	10
Gal. Pump Chain.....	10	45	%
Covert Mfg. Co.:			
Breast.....	40	25	%
Halter.....	40	25	%
Heel.....	40	25	%
Rein.....	40	25	%
Stallion.....	40	25	%
Covert Sad. Works:			
Breast.....	70		
Halter.....	70		
Hold Back.....	70		
Rein.....	70		
Oneida Community:			
Am. Coil and Halters.....	40	40	55
Am. Cow Ties.....	45	50	55
Eureka Coil and Halter.....	45	50	55
Niagara Coil and Halter.....	45	50	55
Niagara Cow Ties.....	45	50	55
Niagara Wire Dog Chains.....	45	50	55
Wire Goods Co.:			
Dog Chain.....	70	10	
Universal Dbl.-Jointed Chain.....	50		

**Chalk—(From Jobbers.)**

Carpenters' Blue.....	gro.	35	38
Carpenters' Red.....	gro.	30	33
Carpenters' White.....	gro.	25	28
See also Crayons.			

**Checks, Door—**

Bardley's.....	45		
Columbia.....	50	10	
Eclipse.....	60	10	

**Chests, Tool—**

American Tool Chest Co.:			
Boys' Chests, with Tools.....	55		
Youths' Chests, with Tools.....	40		
Gentlemen's Chests, with Tools.....	40		
Farmers', Carpenters', etc., Chests,	with Tools.....	20	
Machinists' and Pipe Fitters'	Chests, Empty.....	30	
Tool Cabinets.....	50		
C. E. Jennings & Co.'s Machinists'	Tool Chests.....	35	10

**Chisels—****Socket Framing and Firmer**

Standard List.....	70	10	75
Buck Bros.....	30		
Charles Buck.....	30		
C. E. Jennings & Co. Socket Firmer	No. 10.....	60	
C. E. Jennings & Co. Socket Fram-	ing No. 15.....	60	
Ohio Tool Co.'s.....	70		
Swan's.....	70		
L. & J. White.....	30	30	45

**Tanged—**

Tanged Firmers.....	40	45	10
Buck Bros.....	30		
Charles Buck.....	30		
C. E. Jennings & Co. Nos. 191, 181, 25			
Empire.....	25	45	
Blacksmiths'.....	25	45	

**Cold—**

Cold Chisels, good quality.....	13	15	%
Cold Chisels, fair quality.....	11	12	%
Cold Chisels, ordinary.....	9	10	%

**Chucks—**

Beach Pat., each \$8.00.....	35	45	%
Pratt's Positive Drive.....	25		
Empire.....	25		
Blacksmiths'.....	25		
Skinner Patent Chucks:			
Independent Lathe Chucks.....	50		
Universal.....	50		
Combination.....	50		
Drill Chucks, New Model.....	30		
Drill Chucks, Standard.....	30		
Drill Chucks, Skinner Pat. 9, 1, 2, 40			
Drill Chucks, Skinner Pat. 3, 4,	5, 6, 7, 8.....	30	
Drill Chucks, Positive Drive.....	30		
Planer Chucks.....	25		
Standard Tool Co.'s.....	40		
Improved Drill Chuck.....	45		
Union Mfg. Co.:			
Combination.....	50		
Czar Drill.....	30		
Combination Geared Scroll.....	40		
Geared Scroll.....	40		
Independent Steel.....	40		
Independent Steel.....	40		
Universal.....	50		
Independent Iron P. Plate Jaws.....	40		
Westcott Patent Chucks:			
Lathe Chucks.....	50		
Little Giant Auxiliary Drill.....	50		
Little Giant Double Grip Drill.....	50		
Little Giant Drill, Improved.....	50		
Oneida Drill.....	50		
Scroll Combination Lathe.....	50		

**Clamps—**

Adjustable, Hammers.....	20	20	45
Cabinet, Sargent's.....	50	10	
Carriage Makers', P. S. & W. Co. 50			
Carriage Makers', Sargent's.....	60		
Best, Parallel.....	35	10	
Lineman's, Utica Drop Forge & Tool	Co.....	40	
Saw Clamps, see Vises, Saw Filers.....			

**Cleaners, Drain—**

Iwan's Champion, Adjustable.....	55		
Iwan's Champion Stationary.....	45		

**Sidewalk—**

Star Socket, All Steel.....	30	doz.	4.05
Star Shank, All Steel.....	30	doz.	3.24
W. & C. Shank, All Steel.....	30	doz.	7 1/2 in., \$3.00; 8 in., \$3.25.

**Cleavers, Butchers'—**

Foster Bros.....	30		
New Haven Edge Tool Co. & 45			
Fayette R. Plumb.....	35	35	10
L. & J. White.....	30		

**Clippers—**

Chicago Flexible Shaft Company:			
36 Chicago Horse.....	85	75	15
1902 Chicago Horse.....	10	75	
20th Century Horse, each \$5.00.....	20		
Lightning Belt.....	15	10	
Chicago Belt.....	20	10	
Stewart's Patent Sheep.....	12	75	20

**Finger Nail Clippers—**

Smith & Hemenway Co. 30 doz. net \$2.00			
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**Clips, Axle—**

Eagle, 5-16 and 3/4 in. 75	75	10	
Norway, 5-16 and 3/4 in. 60	10	10	

**Cloth and Netting, Wire**

—See Wire, &amp;c.

**Cocks, Brass—**

Hardware List:			
Compression, Plain Ribbs,	Globe, Kerosene, Racking,	&c., Cocks.....	70

**Coffee Mills—**

See Mills, Coffee.

**Collars, Dog—**

Nickel Chain, Walter R. Stevens &	Son's list.....	40	
Leather, Walter R. Stevens & Son's	list.....	40	

**Combs, Curry—**

Metal Stamping Co.....	40		
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**Mane and Tail—**

Covert's Saddlery Works..... 60 and 10

**Compasses, Dividers, &c.**

Ordinary Goods.....	75	55	10
Bemis & Call Hdw. & Tool Co.:			
Dividers.....	65		
Calipers, Double.....	65		
Calipers, Inside or Outside.....	65		
Calipers, Wing.....	65		
Compasses.....	65		

**Conductor Pipe, Galva.—**

L. C. L. to Dealers:

Territory.....	Nested. Not nested.		
A. Eastern.....	75	12	75
B. Eastern.....	75	12	75
Central.....	75	12	75
Southern.....	70	10	65
Western.....	70	12	75
Terms, 60 days; 2% cash 10 days.			
Factory shipments generally delivered.			
See also Eave Troughs.			

**Coolers, Water—**

Gal. each.....	2	3	4	6	8
Labrador.....	\$1.20	\$1.50	\$1.80	\$2.10	\$2.70
Gal.....	3	4	6	8	10
Iceland, ea. \$1.80.....	2	10	\$2.40	\$3.00	
Gal.....	2	3	4	6	8
Galv. Lined, on \$1.25.....	\$2.00	\$2.25	\$2.50	\$3.00	
Galv. Lined, side handles.....	25				
Gal.....	2	3	4	6	8
Each.....	\$1.95	\$2.15	\$2.40	\$3.30	\$4.15

**Coopers' Tools—**

See Tools, Coopers'.

**Cord—****Sash—**

Braided, Drab..... 1b. 35¢

Braided, White, Com. 1b. 21¢ 22¢

Cable Laid Italian..... 1b. 18¢ 19¢

Common India..... 1b. 10¢ 11¢

Cotton Sash Cord, Twisted..... 11¢ 16¢

Patent Russia..... 1b. 14¢ 15¢

Cable Laid Russia..... 1b. 15¢ 16¢

India Hemp, Braided..... 1b. 12¢ 13¢

India Hemp, Twisted..... 1b. 12¢ 13¢

Patent India, Twisted..... 1b. 12¢ 13¢

Anniston Cordage Co.: Braided Cotton,  |  |  || Old Glory, Nos. 7 to 12..... | 10 | 28 | ¢ |
Anniston, Nos. 7 to 12.....	10	22	¢
Anniston, Nos. 7 to 12.....	10	22	¢
Anniston, Nos. 7 to 12.....	10	22	¢
Pearl Braided, cotton, No. 6, 7, 10,	22; Nos. 7 to 12, 21¢		
Eddystone Braided, Nos. 7, 8, 9 and	10.....	10	24
Eddystone Braided Cotton, No. 6.....	10	25	¢
Harmony Cable Laid Italian.....	10	25	¢
Peerless:			
Cable Laid Italian.....	16		¢
Cable Laid Russian.....	14		¢
Cable Laid India.....	12		¢
Braided India.....	18		¢
Samson, Nos. 7 to 12:			
Braided, Drab Cotton.....	10	36	¢
Braided, Italian Hemp.....	10	36	¢
Braided, Linen.....	10	53	¢
Braided, White Cotton or Spot.....	10	33	¢
Massachusetts, White.....	10	28	¢
Massachusetts, Drab.....	10	32	¢
Phoenix, White, Nos. 7 to 12.....	24		¢
No. 6 cords, 1¢ extra.			
Silver Lake:			
A quality, Drab.....	40		¢
A quality, White.....	35		¢
B quality, Drab.....	35		¢
B quality, White.....	30		¢
Italian Hemp.....	40		¢
Linen.....	57		¢
**Wire, Picture—**

List Oct., '00
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**Faucets—**

Cork Lined.....	50¢@50¢10%
Metallic Key, Leather Lined.....	70¢@70¢10%
Red Cedar.....	40¢@40¢10%
Petroleum.....	70¢@70¢10%
B. & L. B. Co.:.....	60¢@60¢10%
Star.....	60¢@60¢10%
West Lock.....	50¢@50¢10%
John Sommer's Peerless Tin Key.....	40¢@40¢10%
John Sommer's Boss Tin Key.....	50¢@50¢10%
John Sommer's Victor Mtl. Key.....	50¢@50¢10%
John Sommer's Duplex Metal Key.....	60¢@60¢10%
John Sommer's Diamond Lock.....	40¢@40¢10%
John Sommer's I. X. L. Cork Lined.....	50¢@50¢10%
John Sommer's Reliable Cork Lined.....	50¢@50¢10%

John Sommer's Chicago Cork Lined.....	60¢@60¢10%
John Sommer's O. K. Cork Lined.....	50¢@50¢10%
John Sommer's No Brand, Cedar.....	50¢@50¢10%
John Sommer's Perfection, Cedar.....	40¢@40¢10%
McKenna, B. & L. B. Co.:.....	50¢@50¢10%
Burglar Proof, N. P. ....	25¢@25¢10%
Improved, 3/4" & 1" inch.....	25¢@25¢10%
Self Measuring.....	25¢@25¢10%
Enterprise, 3/4" doz. \$36.00.....	40¢@40¢10%
Lane's, 3/4" doz. \$36.00.....	40¢@40¢10%
National Measuring, 3/4" doz. \$36.40@10%	

**Felloe Plates—**

See Plates, Felloe.

**Files— Domestic—**

List revised Nov. 1, 1899.

Best Brands.....	70¢@10¢@75¢5%
Standard Brands.....	75¢@10¢@75¢10%
Lower Grade.....	75¢@10¢@80¢10%

**Imported—**

Stubs' Tapers, Stubs' List, July 24, '97.....	30%
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**Fixtures, Fire Door—**

Richards Mfg. Co.:.....	
Universal, No. 103.....	\$4.00
Special, No. 104.....	\$4.00
Fusible Links.....	\$0.25
Expansion Bolts.....	50¢@10%

**Grindstone—**

Net Prices:					
Inch.....	15	17	19	21	24
Per doz.....	\$2.15	2.85	3.25	3.75	4.50
P. H. & W. Co. ....	30¢@10¢@40%				
Reading Hardware Co. ....	60%				
Sargent's.....	70%				
Stowell's Giant Grindstone Hanger.....	40¢ doz. \$6.00				
Stowell's Grindstone Fixtures, Extra Heavy.....	50¢@10¢@10%				
Stowell's Grindstone Fixtures, Light.....	60¢@10%				

**Fodder Squeezers—**

See Compressors.

**Forks—**

Base Discounts Aug. 1, 1899, list:	
Hay, 2 tine.....	50¢@10¢5%
Boys' & Fish, 2 tine.....	50¢@10¢5%
Hay & Boys', 3 tine.....	60¢5%
Hay & Boys', 4 tine.....	66¢2%
Champion Hay.....	66¢2%
Hay & Header, long 3 tine.....	65¢
Header, 4 tine.....	65¢
Barley 4 & 5 tine, Steel.....	60¢20¢
Manure, 4 tine.....	60¢15¢21¢
Manure, 5 & 6 tine.....	60¢21¢
Spading.....	70¢21¢
Potato Digger, 6 tine.....	60¢21¢
Sugar Beet.....	40¢10¢
Coke & Coal.....	40¢10¢
Heavy Mill & Street.....	65¢
Iowa Dig-Ezy Potato.....	60¢10¢
Victor, Hay.....	60¢15¢21¢
Victor, Manure.....	66¢
Champion, Hay.....	66¢
Champion, Header.....	66¢
Champion, Manure.....	60¢15¢21¢
Columbia, Hay.....	60¢20¢
Columbia, Manure.....	70¢
Columbia, Spading.....	70¢12¢
Hawkeye Wood Barley.....	60¢10¢
W. & C. Potato Digger.....	60¢20¢
Acme Hay.....	60¢20¢
Acme Manure, 4 tine.....	60¢10¢5%
Dakota Header.....	60¢20¢
Jackson Steel Barley.....	60¢20¢
Kansas Header.....	60¢
W. & C. Favorite Wood Barley.....	40¢
Plated—See Spoons.	

**Frames— Saw—**

White, 8'x1' Bar, per doz. 75¢@80¢	
Red, 8'x1' Bar, per doz. \$1.00@1.25	
Red, Dbl. Brace, per doz. \$1.40@1.50	

**Freezers, Ice Cream—**

Qt. ....	1	2	3	4	6
Each.....	\$1.25	\$1.60	\$1.90	\$2.20	\$2.80

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp.....	\$2.75
Cotton.....	3.20
Waterproof Spl. Taped.....	3.65
Waterproof Dbl. Taped.....	4.40
Waterproof Tpl. Taped.....	5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern.....	80¢@10¢@80¢10¢5%
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**Gauges—**

Marking, Mortise, &c.....	50¢@10¢@50¢10¢10¢5%
Chapin-Stephens Co.:.....	
Marking, Mortise, &c.....	50¢@10¢@50¢10¢10¢10%
Scholl's Patent.....	50¢@10¢@50¢10¢10%
Door Hangers.....	50¢@50¢10%
Stanley R. & L. Co.'s Butt and Rabbit Gauge.....	20¢@20¢10¢10%
Wire, Brown & Sharpe's.....	25¢
Wire, Morse's.....	25¢
Wire, P. S. & W. Co.....	30¢@10%

**Gimlets— Single Cut—**

Nail, Metal, Asst., gro.....	\$1.40@1.50
Spike, Metal, Asst., gro.....	\$2.80@3.50
Nail, Wood Handled, Assorted, gro.....	\$1.75@2.00
Spike, Wood Handled, Assorted, gro.....	\$1.25@1.50

**Glass, American Window**

See Trade Report.

**Glasses, Level—**

Chapin-Stephens Co.....	60¢@60¢10¢10%
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**Glue, Liquid Fish—**

Bottles or Cans, with Brush.....	25¢@50%
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Cans (1/2 pts., pts., qts., 1/2 gal.).....	25¢@48%
International Glue Co. (Martin's).....	40¢@10%

**Grease, Axle—**

Common Grade.....	gro. \$1.50@5.50
Dixon's Everlasting, 10-lb pails, ea. 85¢	
Dixon's Everlasting in boxes, 3/4 doz.	
1 lb., \$1.20; 2 lb., \$2.00	

**Grips, Nipple—**

Perfect Nipple Grips.....	40¢@10¢2%
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**Griddles, Soapstone—**

Pike Mfg. Co.....	33¢@33¢10%
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**Grindstones—**

Bicycle Emery Grinder.....	\$6.50
Bicycle Grindstones, each.....	\$2.50@3.00
Pike Mfg. Co.:.....	
Improved Family Grindstones, per inch.....	\$2.00
Pike Mower and Tool Grinder, each.....	\$6.00
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....	\$3.25

**Halters and Ties—**

Corvet Mfg. Co.:.....	
Web.....	45%
Jute Rope.....	50¢5%
Sisal Rope.....	35¢5%
Cotton Rope.....	45¢2%
Hemp Rope.....	45¢2%
Corvet's Saddlery Works:.....	
Web and Leather Halters.....	70%
Jute and Manila Rope Halters.....	70%
Sisal Rope Halters.....	60¢20%
Jute, Manila and Cotton Rope Ties.....	70%
Sisal Rope Ties.....	60¢10%

**Hammers—****Handled Hammers—**

Heller's Machinists'.....	40¢@10¢40¢10%
Heller's Farmers'.....	40¢@10¢40¢10%
Magnetic Tack, Nos. 1, 2, 3.....	\$1.25
\$1.50, \$1.75.....	40¢@10¢40%
Peck, Stow & Wilcox.....	40¢@10¢5%
Fayette R. Plumb:.....	
Plumb, A. E. Nail.....	33¢@7¢@33¢10¢7%
Engineers' and R. S. Hand.....	50¢7¢@50¢10¢7¢5%
Machinists' Hammers.....	50¢50¢10¢5%
Riveting and Tappers.....	40¢2¢@40¢10¢2%
Sargent's C. S. New List.....	40%

**Heavy Hammers and Sledges—**

Under 3 lb., per lb. 50¢.....	80¢@10¢10¢85%
3 to 5 lb., per lb. 40¢.....	80¢@10¢10¢85%
Over 5 lb., per lb. 30¢.....	85¢@85¢10%
Wilkinson's Smith's.....	1 lb. 9¢@10¢

**Handles—****Agricultural Tool Handles**

Axe, Pick, &c.....	60%
Hoe, Rake, &c.....	45¢@50¢5%
Fork, Shovel, Spade, &c.....	
Long Handles.....	45¢@50¢5%
D Handles.....	40%

**Cross-Cut Saw Handles—**

Atkins'.....	40¢5%
Champion.....	45¢@45¢10%
Dixon's.....	50%

**Mechanics' Tool Handles—**

Auger, assorted.....	gro. \$2.50@3.25
Brad Axl.....	gro. \$1.65@1.85
Chisel Handles.....	
Apple Tanged Firmer, gro. assorted.....	\$2.40@2.65
Hickory Tanged Firmer, gro. assorted.....	\$2.15@2.40
Apple Socket Firmer, gro. assorted.....	\$1.75@1.95
Hickory Socket Firmer, gro. assorted.....	\$1.45@1.60
Hickory Socket Framing, gro. assorted.....	\$1.60@1.75
File, assorted.....	gro. \$1.30@1.40
Hammer, Hatchet, &c.....	60¢@60¢10%

**Hand Saw, Varnished, doz.**

80¢@85¢; Not Varnished.....	65¢@75¢
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**Plane Handles:**

Jack, doz. 30¢; Jack, Bolted.....	75¢
Fore, doz. 45¢; Fore, Bolted.....	90¢
Chapin-Stephens Co.:.....	
Carving Tool.....	40¢@40¢10%
Chisel.....	60¢@60¢10%
File and Awl.....	65¢@65¢10%
Saw and Plane.....	40¢@40¢10%
Screw Driver.....	40¢@40¢10%
Millers Falls Adl. and Hatchet Auger Handles.....	15¢10%
Nicholson Simplicity File Handle.....	30¢

**Hangers—**

NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c	
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**Barn Door, New Pattern, Round Groove, Regular:**

Inch.....	3	4	5	6	8
Single Doz.....	\$0.90	1.25	1.60	1.95	2.50

**Barn Door, New England Pattern, Check Back, Regular:**

Inch.....	3	4	5	6
Single Doz.....	\$1.30	1.85	2.50	3.00

**Althiff Mfg. Co.:.....**

Reliable, No. 1.....	per doz. \$8.00
Reliable, No. 2.....	per doz. \$9.60

**Chicago Spring Butt Co.:.....**

Oscillating.....	25%
Big Twin.....	25%
Chisholm & Moore Mfg. Co.:.....	
Baggage Car Door.....	50%
Elevator.....	30%
Railroad.....	50%

**Cronk & Carter Mfg. Co.:.....**

Loose Axle.....	60¢@10¢5%
Roller Bearing.....	70¢5%
Griffin Mfg. Co.:.....	
Solid Axle, No. 10.....	\$12.00.....70%
Roller Bearing, No. 11.....	\$15.00.....70%
Roller Bearing, Ex. H7.....	No. 22.....\$18.00.....70%
Hinged Hangers.....	\$16.00.....60¢@10%

**Lane Bros. Co.:.....**

Parlor, Ball Bearing.....	\$4.00
Parlor, Standard.....	\$3.15
Parlor, No. 105.....	\$2.55
Parlor, New Model.....	\$2.80
Parlor, New Champion.....	\$2.25
Barn Door, Standard.....	60¢@10¢2%
Hinged.....	net \$6.40
Covered.....	60¢@10%
Special.....	70¢5%

**Lawrence Bros.:.....**

Advance.....	60¢10%
Cleveland.....	70¢5%
Clipper, No. 75.....	60%
Crown.....	60¢10%
Easy Parlor Door, Dbl. Sets.....	\$2.50; Single Sets, \$1.25.....60¢5%
Giant.....	60¢5%
Hummer.....	70¢5%
New York.....	60¢10%
Peerless.....	70¢5%
Sterling.....	60¢10%

**McKinney Mfg. Co.:.....**

No. 1, Special.....	\$15.....60¢10%
No. 2, Standard.....	\$18.....60¢10%
Hinged Hangers.....	\$16.....50%
Meyers' Stayon Hangers.....	60%

**Richards Mfg. Co.:.....**

Phonograph Track No. 3.....	\$2.15
Ball B'r'g St'l Track No. 10.....	\$2.40
Roller B'r'g St'l Track No. 12.....	\$2.30
Ball B'r'g St'l Track No. 13.....	\$2.40
Roller B'r'g St'l Track No. 14.....	\$2.30
Hero, Adj. Track No. 19.....	50%
Adjustable Track Tandem Trol.....	50%
Seal, Steel Track No. 8.....	\$2.40
Auto Adj. Track No. 22.....	40¢10%
Trolley B. D. No. 17.....	\$1.40
Trolley F. D. No. 120.....	\$2.35
Trolley F. D. No. 121.....	\$2.45
Trolley F. D. No. 122.....	\$2.60
Safety Underwriters F. D. No. 101.....	\$2.25
Tandem No. 44.....	70¢5%
Trolley F. D. No. 151.....	\$3.00
Palace, Adjustable Track No. 122.....	40¢10%
Royal, Adjustable Track No. 122.....	40¢10%
Ives' Wood Track No. 1.....	\$2.15
Trolley B. D. No. 20.....	\$1.35
Trolley B. D. No. 21.....	\$1.45
Trolley B. D. No. 22.....	\$1.50
Trolley B. D. No. 23.....	\$1.60
Roller Bearings Nos. 39, 40, 41.....	43, 44.....70¢5%
Anti-friction No. 42.....	60¢10%
Hinged Tandem No. 48.....	60%
Folding Door B. B. Swivel No. 135.....	30%

**Safety Door Hanger Co.:.....**

Storm King Safety.....	60%
U. S. Standard Hinge.....	60%
Stowell Mfg. & Foundry Co.:.....	
Acme Parlor Ball Bearing.....	40%
Alex. Hinge Door.....	60%
Apex Parlor Door.....	50¢@10¢5%
Atlas.....	60%
Baggage Car Door.....	50%
Chimax Anti-Friction.....	50¢10%
Elevator.....	50%
Express.....	50%
Freight Car Door.....	60%
Interstate.....	60¢10%
Lundy Parlor Door.....	50¢10%
Matchless.....	60¢10%
Nansen.....	70¢5%
Parlor Door.....	50¢10%
Railroad.....	50¢10%
Rex Hinge Door.....	60%
Street Car Door.....	60%
Steel, Nos. 300, 404, 500.....	50¢10%
Underwriters' Fire Door.....	10%
Wild West Warehouse Door.....	50%
Zenith for Wood Track.....	50¢10%

**A. L. Sweet Iron Works:.....**

Meyers' Stayon Hangers.....	60%
Richards Mfg. Co.:	
Pioneer Wood Track No. 3.....	\$2.1

### Wrought Iron Hinges— Strap and T Hinges, &c., list March 15, 1901:

Light Strap Hinges, 80x65	Extra 3 or 4 tons
Heavy Strap Hinges, 80x65	
Light T Hinges, 75x65	
Heavy T Hinges, 75x65	
Extra Heavy T Hinges, 80x65	
Hinge Hasps, 70	
Cor. Heavy Strap, 80x65	
Cor. Ex. Heavy T, 80x65	
Screw Hook, 6 to 12 in., lb. 3 1/2	
and Strap, 1 1/2 to 2 in., lb. 3	
Screw Hook and Eye, 1/2 to 1 in., lb. 6	
1/2 in., lb. 7	
1/2 in., lb. 9	

### Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers...35%

### Hods— Coal—

	Per doz.
Inch, 15 16 17 18	
Galt. Open, \$2.50 2.75 3.00 3.25	
Jap. Open, \$1.90 2.10 2.25 2.55	
Galt. Funnel, \$3.00 3.30 3.60 3.90	
Jap. Funnel, \$2.45 2.65 2.85 3.30	

### Masons, Etc.—

Cleveland Wire Spring Co.	
Steel Mortar, each \$1.45	
Steel Brick, each \$1.10	

### Hoes— Eye—

Scovill and Oval Pattern, 60x100x60x100x100	
Grub, list Feb. 23, 1899, 70x100x75x100	
D. & H. Scovill, 35%	

### Handled—

August 1, 1899, list.	
Field and Garden, 70x100	
Smith's Patent, 50	
Meadow & Rhode Island, 75	
Black Diamond, 70x100	
Mortar and Street, 70x100	
Planters', 75x12 1/2	
Cotton, 70x100	
Cotton Chopper, 75x12 1/2	
Weeding Hoes, 66x15	
Steel Weeders, 66x15	
Malleable Weeders, 66x15	
Pt. Madison Cotton Hoe, 70x10x10	
Pt. Madison Crescent Cultivator Hoe, 70x10x10	
Pt. Madison Mattock Hoes:	
Regular Weight, 70x10x10	
Junior Size, 70x10x10	
Pt. Madison Sprouting Hoe, 70x10x10	
Pt. Madison Dixie Tobacco Hoe, 75x10x12 1/2	
Kretzinger's Cut Easy, 70x10x10	
Warren Hoe, 75x12 1/2	
W. & C. Ivanhoe, 75x12 1/2	
B. B. 6 in., Cultivator Hoe, 75x12 1/2	
B. B. 6 in., 75x12 1/2	
Acme Weeding, 70x10x10	
W. & C. L'ning Shuffle Hoe, 70x10x10	

### Hoisting Apparatus—

See Machines, Hoisting.

### Holders— Bit—

Angular, 70 doz., \$24.00	45x10%
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### Door—

Empire, 50%	
Bardale's, 45%	

### File and Tool—

Nicholson File Holders and File	
Handles, 33x40%	

### Hooks—Cast Iron—

Bird Cage, Reading, 60x10	
Bird Cage, Sargent's List, 60x10	
Ceiling, Sargent's List, 60x10	
Clothes Line, Reading List, 60x10	
Clothes Line, Sargent's List, 60x10	
Coat and Hat, Sargent's List, 60x10	
Clothes Line, Stowell's, 70x10	
Coat and Hat, Reading, 45x20	
Coat and Hat, Stowell's, 70x10	
Coat and Hat, Wrightsville, 65x20	
Harness, Reading List, 60x10	
Harness, Stowell's, 60x10	
School House, Stowell's, 70x10	

### Wire—

Belt, 80x10	
Wire C. & H. Hooks, 75x65x75x10	
Atlas, Coat and Hat, 75	
Single Cases, 75x10	
10 Case Lots, 75x10	
Columbian Hdy. Co., Gem, 60x10	
Parker Wire Goods Co., King, 75x10	
Van Wagoner, Coat and Hat, 70x10	
Western W. G. Co. Molding, 75x10	
Wire Goods Co., 60x10	
Chief, 70x10	
Crown, 70x10	
Czar, 65	
V. Brace, 70x10	
Czar Harness, 50x10	

### Wrought Iron—

Box, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$2.50.	
Cotton, doz., \$1.05x1.25	
Wrought Staples, Hooks, &c., See Wrought Goods.	

### Miscellaneous—

Hooks, Bench, see Stops, Bench.	
Bush, Light, doz., \$1.75; Medium, \$5.35; Heavy, \$6.25	
Grass, Nos. 1 2 3 4	
Rest, \$1.50 1.75 2.00	
Common, \$1.30 1.50 1.75 1.69	
Potato and Manure, 60x15	
Whiffletree, lb. 5 1/2x6 1/2	
Hooks and Eyes:	
Brass, 60x10x10x75	
Malleable Iron, 70x50x70x10	
Covert Mfg. Co. Gate and Scuttle	
Hooks, 35%	
Covert Saddlery Works' Self Locking	
Gate and Door Hook, 60%	

Ft. Madison Cut-Easy Corn Hooks, 70 doz., \$3.25 net  
Bench Hooks—See Bench Stops.  
Corn Hooks—See Knives, Corn.

### Horse Nails—

See Nails, Horse.

### Horseshoes—

See Shoes, Horse.

### Hose, Rubber—

Garden Hose, 3/4-inch:	
Competition, ft. 1 1/2x5	5
3-ply Standard, ft. 1 1/2x7	7
4-ply Standard, ft. 1 1/2x8	8
3-ply extra, ft. 1 1/2x9	9
4-ply extra, ft. 1 1/2x10	10
Cotton Garden, 3/4-in., coupled:	
Low Grade, ft. 6	7
Fair Quality, ft. 8	9

### Irons— Sad—

From 4 to 10, lb. 2 1/2x13	13
B. B. Sad Irons, lb. 3 1/2x13 1/2	13 1/2
Chinese Laundry, lb. 1 1/2x15	15
Chinese Sad, lb. 1 1/2x15	15
Mrs. Potts, cents per set:	
Nos. 50 55 60 65	
Jap'd Tops, 62 59 72 69	
Tin'd Tops, 65 62 75 72	
New England Pressing, lb. 3 1/2x14	14

### Pinking—

Pinking Irons, doz., 50x100	100
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### Soldering—

Soldering Coppers, 2 1/2 & 3, 19x20	20
1 1/2 & 2, 21x22	22

### Jacks, Wagon—

Covert Mfg. Co., 30x5 1/2	
Steel, 45x2 1/2	
Covert's Saddlery Works:	
Daisy, 60x10	
Victor, 60	
Lockport, 50	
Lane's Steel, 50x10x5	
Richards' Tiger Steel, No. 130, 40%	

### Kettles—

Brass, Spun, Plain, 20x25	
Enamelled and Cast Iron—See Ware, Hollow.	

### Knives—

Butcher, Kitchen, &c.—

Foster Bros' Butcher, &c., 30%	
Smith & Hemenway Co., 40x10	
Wilkinson Shear & Cutlery Co., 50%	

### Corn—

Withington Acme, 70 doz., \$2.65	
Dent, \$2.75; Adj. Serrated, \$2.20	
Serrated, \$2.10; Yankee No. 1, \$1.50	
Yankee No. 2, \$1.15	

### Drawing—

Standard List, 70x10x75x10	
C. E. Jennings & Co., Nos. 45, 46, 40	
Jennings & Griffin, Nos. 41, 42, 60	
Ohio Tool Co.'s, Nos. 41, 42, 70	
Swan's, 70x10x25	
Watrous, 16x15	
L. & J. White, 20x25	

### Hay and Straw—

Serrated Edge, per doz., \$5.50	
Ivan's Sickle Edge, 70 doz., \$9.50	
Ivan's Serrated, 70 doz., \$10.00	

### Mincing—

Buffalo, 70 doz., \$13.00	
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### Miscellaneous—

Farmers', doz., \$3.00x3.25	
Wostenholm's, 70 doz., \$3.00x3.25	

### Knobs—

Base, 2 1/2-inch, Birch, or Maple, Rubber Tip, gro. \$1.10x1.15	
Carriage, Jap., all sizes, 40x15	

Door, Mineral, doz., 65x70	
Door, Por. Jap'd, doz., 70x75	
Door, Por. Nickel, doz., \$2.05x2.15	
Bardley's Wood Door, Shutters, &c., 15%	
Picture, Sargent's, 60x10x10	

### Lacing, Leather—

See Belting, Leather—

### Ladders, Store, &c.—

Lane's Store, 25%	
Meyers' Noiseless Store Ladders, 50%	
Richards Mfg. Co., No. 112, 40%	
Climax Shelf, No. 113, 40%	
Trolley, No. 100, 40%	

### Ladies, Melting—

L. & G. Mfg. Co. (low list), 25%	
P. S. & W., 50%	
Reading, 60%	
Sargent's, 50x10	

### Lanterns— Tubular—

Regular Tubular, No. 0, doz., \$4.35x4.75	
Lift Tubular, No. 0, doz., \$4.75x5.25	
Hinge Tubular, No. 0, doz., \$4.75x5.25	

### Other Styles, 40x10x10x10

### Bull's Eye Police—

No. 1, 2 1/2-inch, \$2.50x2.75	
No. 2, 3-inch, \$2.75x3.00	

### Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron, 50%	
Stowell's Badger, Cast Iron, 50%	

### Latches— Thumb—

Roggin's Latches, with screw, doz., 35x40	
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### Door—

Richards' Bull Dog, Heavy, No. 125, 40%	
Richards' Trump, No. 127, 50%	

### Leaders, Cattle—

Small, doz., 55¢; large, 60¢	
Covert Mfg. Co., 35%	

### Lifters, Transom—

R. & E., 33x4%	
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### Lines—

Wire Clothes, Nos. 18	19	20
100 feet.....	\$2.20	2.00 1.65
75 feet.....	\$1.80	1.70 1.30
Samson Cordage Works:		
Solid Braided Chalk, Nos. 0 to 3,	40%	
Silver Lake Braided Chalk, No. 0,		
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.		
3, \$7.50;		per 20%
Masons' Lines, Shade Cord, &c.:		
White Cotton, No. 3½, \$1.50; No. 4,		
\$2.00; No. 4½, \$2.50; Colors, No. 3½,		
\$1.75; No. 4, \$2.25; No. 4½, \$2.75;		
Linon, No. 3½, \$2.50; No. 4, \$3.50;		
No. 4½, \$4.50;		
Tan and Ash, No. 3½, \$1.50; No. 4,		5
White Cotton, \$7.50; Drab Cotton,		
\$8.50		20%
Clothes Lines, White Cotton, 50 ft.,		
\$2.75; 60 ft. \$3.25; 70 ft. \$3.75; 75		
ft. \$4.00; 80 ft. \$4.25; 90 ft. \$4.75;		
100 ft. \$5.25.		20%



**Tarred Paper—**

1 ply (roll 300 sq. ft.), ton..... \$32.50@35.00  
 2 ply, roll 108 sq. ft..... 55@60¢  
 3 ply, roll 108 sq. ft..... 78@80¢  
 Slater's Felt (roll 500 sq. ft.)..... 75¢  
 NOTE.—Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.  
 R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.)..... \$2.75

**Sand and Emery—**

Flint Paper and Cloth, 50¢@10¢@60¢  
 Garnet Paper and Cloth..... 25¢  
 Emery Paper and Cloth, 50¢@10¢@60¢

**Parers—Apple—**

Advance..... doz. \$4.00  
 Baldwin..... doz. \$4.00  
 Bonanza Improved..... doz. \$6.50  
 Daisy..... doz. \$4.00  
 Dandy..... doz. \$7.50  
 Eureka Improved..... doz. \$20.00  
 Family Bay State..... doz. \$15.00  
 Improved Bay State..... doz. \$36.00  
 Little Star..... doz. \$5.00  
 New Lightning..... doz. \$7.00  
 Reading 72..... doz. \$3.25  
 Reading 78..... doz. \$6.25  
 Rocking Table..... doz. \$6.20  
 Turn Table '98..... doz. \$6.00  
 White Mountain..... doz. \$5.00

**Potato—**

Saratoga..... doz. \$7.00  
 White Mountain..... doz. \$6.00

**Picks and Mattocks—**

List Feb. 23, 1899..... 70¢@10¢@75¢@10¢

**Pinking Irons—**

See Irons, Pinking.

**Pins, Escutcheon—**

Brass..... 60¢@10¢@10¢  
 Iron, list Nov. 11, '85..... 60¢@10¢@10¢

**Pipe, Cast Iron Soil—**

Standard, 2-6 in..... 50¢@10¢  
 Extra Heavy, 2-6 in..... 65¢  
 Fittings..... 70¢

**Pipe, Merchant—**

Carload Lots.  
 Steel. Blk. Galv. Blk. Galv.  
 1/4 & 1/2 in..... 55¢ 69¢ 53¢  
 3/4 & 1 in..... 75¢ 63¢ 73¢ 61¢  
 1 & 2 in..... 79¢ 69¢ 77¢ 67¢  
 7 to 12 in..... 74¢ 59¢ 72¢ 57¢

**Pipe, Sewer—**

Jobbers' Prices—

Standard Pipe and Fittings, 2 to 2 1/2 in.:

New England..... 67¢  
 New York and New Jersey..... 70¢  
 Maryland, Delaware, E. Pa..... 72¢  
 West. Pa. and West Va..... 73¢  
 Virginia..... 75¢  
 Ohio, Michigan and Ky..... 75¢  
 Indiana..... 77¢  
 NOTE.—Carload lots are generally delivered.

**Pipe, Stove—**

Edwards' Nested Stove Pipe:  
 C. L. L. C. L.  
 5 in., per 100 joints..... \$7.00 \$8.00  
 6 in., per 100 joints..... 7.50 8.50  
 7 in., per 100 joints..... 8.50 9.50

**Planes and Plane Irons—**

Wood Planes—

Bench, First qual..... 40¢@50¢@10¢  
 Bench, Second qual..... 30¢@50¢@10¢  
 Molding..... 33¢@50¢@10¢  
 Bailey's (Stanley R. & L. Co.)..... 5¢@10¢@25¢@10¢

Chapin-Stephens Co.:

Bench, First Quality..... 40¢@40¢@10¢  
 Bench, Second Quality..... 50¢@50¢@10¢  
 Molding..... 33¢@50¢@10¢  
 Toy and German..... 40¢@40¢@10¢  
 Chapin's..... 60¢  
 Ohio Tool Co.:

Bench, First Quality..... 40¢@40¢@10¢  
 Bench, Second Quality..... 50¢@50¢@10¢  
 Molding..... 33¢@50¢@10¢  
 Adjustable Wood Bottom..... 60¢  
 Union..... 60¢

**Iron Planes—**

Bailey's (Stanley R. & L. Co.)..... 25¢@10¢@25¢@10¢

Chapin's Iron Planes..... 50¢@10¢

Miscellaneous Planes (Stanley R. & L. Co.)..... 20¢@10¢@20¢@10¢

Ohio Tool Co.'s Iron Planes..... 60¢

Sargent's..... 60¢@10¢

Union..... 60¢

**Plane Irons—**

Wood Bench Plane Irons..... 30¢@50¢@10¢

Buck Bros..... 30¢@30¢@10¢

Chapin-Stephens Co..... 30¢@30¢@10¢

Ohio Tool Co..... 30¢@30¢@10¢

Stanley B. & L. Co..... 20¢@10¢@20¢@10¢

Union..... 50¢

L. & I. J. White..... 20¢@50¢@25¢

**Planters, Corn, Hand—**

Kohler's Eclipse..... doz. \$2.50

**Plates—**

Felton..... lb. 3/4¢@1/4¢

Self-Sealing Pie Plates (S. S. & Co.)..... doz. \$2.00

**Pliers and Nippers—**

Button Pliers..... 75¢@10¢@80¢

Gas Burner, per doz., 5 in..... \$1.25

@ \$1.50; 6 in., \$1.45 @ \$1.50.

Gas Pipe..... 7 8 10 12-in.

\$2.00 \$2.25 \$3.00 \$3.75

Acme Nippers..... 50¢@50¢@5¢

Cronk & Carrier Mfg. Co.:

American Button..... 75¢@10¢

Cronk's..... 60¢@10¢

Improved Button..... 60¢

Stub's Pattern..... 50¢

Combination and others..... 33¢

Heiler's Farriers' Nippers, Pincers and Tools..... 40¢@10¢@40¢@10¢

P. S. & W. Timmers' Cutting Nippers..... 30¢@30¢@10¢  
 Swedish Side, End and Diagonal Cutting Pliers..... 50¢  
 Ulica Drop Forge & Tool Co.:  
 Pliers and Nippers, all kinds..... 40¢

**Plumbs and Levels—**

Chapin-Stephens Co.:  
 Plumbs and Levels..... 30¢@30¢@10¢  
 Chapin's Imp. Brass Cor. 10¢@10¢@10¢  
 Stanley's Duplex..... 20¢@20¢@10¢  
 Stanley's Duplex..... 20¢@20¢@10¢  
 Woods' Extension..... 33¢

**Poachers, Egg—**

Buffalo Steam Egg Poachers, doz. No. 1, \$6.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00..... 50¢

**Points, Glaziers—**

Bulk and 1-lb. papers..... lb. 8¢

1/2 lb. papers..... lb. 8¢

1/4 lb. papers..... lb. 9¢

**Pokes, Animal—**

Ft. Madison Hawkeye..... doz. \$3.25

Ft. Madison Western..... doz. \$4.00

**Police Goods—**

Manufacturers' Lists..... 25¢@25¢@5¢

**Polish—Metal—**

Prestoline Liquid, No. 1 (1/2 pt.)..... doz. \$3.00; No. 2 (1 qt.)..... \$9.72

Prestoline Paste..... 40¢@10¢

George William Hoffman:

U. S. Metal Polish Paste, 3 oz. boxes, doz. \$5.00; 1 lb. boxes, doz. \$1.25; 1 lb. boxes, doz. \$2.25.

U. S. Liquid, 8 oz. cans, doz. \$1.25; 1 lb. cans, doz. \$1.20.

Barkeepers' Friend Metal Polish, doz. \$1.75; 1 lb. cans, doz. \$1.80.

Wynn's White Silk, 1/2 pt. cans, doz. \$2.00

**Stove—**

Black Eagle Benzine Paste, 5 lb. cans, doz. \$10¢

Black Eagle, Liquid, 1/2 pt. cans, doz. \$7.5¢

Black Jack Paste, 3/4 lb. cans, doz. \$9.00

Black Kid Paste, 5 lb. cans, each, \$0.65

Ladd's Black Beauty, gr. \$10.00..... 50¢

Joseph Dixon, gr. \$5.75..... 10¢

Dixon's Plumbago..... 10¢

Fireseed..... gr. \$2.50

Gem, gr. \$4.50..... 10¢

Japanese..... gr. \$3.50

Jet Black..... gr. \$3.50

Peerless Iron Enamel, 10 oz. cans, doz. \$1.50

Wynn's:

Black Silk, 5 lb. pail..... each 70¢

Black Silk, 1/2 lb. box..... doz. \$1.00

Black Silk, 5 oz. box..... doz. \$0.75

Black Silk, 1/2 pt. liq..... doz. \$1.00

**Poppers, Corn—**

1 qt., Square..... gro. \$9.00

1 qt., Round..... gro. \$10.00

1 1/2 qt., Square..... gro. \$11.00

2 qt., Square..... gro. \$13.00

**Post Hole and Tree Augers and Diggers—**

See also Diggers, Post Hole, etc.

**Posts, Steel—**

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6 1/2 ft., 48¢.

Steel Hitching Posts..... each \$1.30

**Potato Parers—**

See Parers, Potato.

**Pots, Glue—**

Enamelled..... 40¢

Tinned..... 35¢

**Powder—**

In Canisters:

Duck, 1 lb..... each 45¢

Fine Sporting, 1 lb..... each 75¢

Rifle, 1 lb..... each 15¢

Rifle, 1 lb..... each 25¢

King's Semi-Smokeless:

Keg (25 lb. bulk)..... \$6.50

Half Keg (12 1/2 lb. bulk)..... \$3.50

Quarter Keg (6 1/4 lb. bulk)..... \$1.90

Case 24 (1 lb. cans bulk)..... \$8.50

Half case (1 lb. cans bulk)..... \$4.50

King's Smokeless: Shot Gun Rifle.

Keg (25 lb. bulk)..... \$12.00 \$15.00

Half Keg (12 1/2 lb. bulk)..... 6.25 7.75

Quarter Keg (6 1/4 lb. bulk)..... 3.25 4.00

Case 24 (1 lb. cans bulk)..... 14.00 17.00

Half case 12 (1 lb. c. bk.)..... 7.25 8.75

Robin Hood Sm. less Shot Gun..... 50¢@20¢

**Presses—**

Fruit and Jelly—

Enterprise Mfg. Co..... 20¢@25¢

**Seal Presses—**

Morrill's No. 1, doz. \$20.00..... 50¢

**Pruning Hooks and Shears**

See Shears.

**Pullers, Cork—**

Invincible Cork Puller..... \$21.00

**Pullers, Nail—**

Cyclops..... 50¢

Miller's Falls, No. 3, doz. \$12.00..... 33¢@10¢

Morrill's No. 1, Nail Puller, doz. \$20.00..... 50¢

Pearson No. 1, Cyclone Spike Puller, each \$30.00..... 50¢

Pelican, doz. \$9.00..... 40¢@10¢

Seranton, Case Lots:

No. 2B (large)..... \$5.50

No. 3B (small)..... \$5.00

Smith & Hemenway Co.:

Diamond B. No. 2, case lots..... doz. \$6.00

Diamond B. No. 3, case lots..... doz. \$5.50

Giant No. 1, doz. \$18; No. 2, \$16.50; No. 3, \$15..... 40¢

**Pulleys, Single Wheel—**

Inch..... 2 2 1/4 3  
 Avening, doz..... \$0.55 .85 1.15  
 Hay Fork, Swivel or Solid Eye, doz., 4 in., \$1.15; 5 in., \$1.50  
 Inch..... 2 2 1/4 2 1/2  
 Hot House, doz..... \$0.70 .90 1.25  
 Inch..... 1 1/4 1 1/2 2  
 Screw, doz..... \$0.16 .19 .23 .30  
 Inch..... 1 1/4 2 2 1/4 2 1/2  
 Side, doz..... \$0.30 .40 .55 .63  
 Inch..... 1 1/4 1 1/2 2 2 1/2  
 Tackle, doz..... \$0.30 .42 .58 1.00  
 Stowell's:  
 Ceiling or End, Anti-Friction..... 60¢@10¢  
 Dumb Waiter, Anti-Friction..... 60¢@10¢  
 Electric Light..... 60¢@10¢  
 Side, Anti-Friction..... 60¢@10¢

**Sash Pulleys—**

Common Frame; Square or Round End, per doz, 1 1/4 and 2 in..... 16¢@19¢  
 Auger Mortise, no Face Plate, per doz., 1 1/4 and 2 in..... 16¢@19¢  
 Acme..... 1 1/4 in., 16¢; 2 in., 19¢  
 Fox-All-Steel, Nos. 3 and 7, 2 in..... doz. 50¢  
 Grand Rapids All Steel Noiseless..... 70¢@10¢  
 Niagara..... 1 1/4 in., 16¢; 2 in., 19¢  
 No. 26, Troy..... 1 1/4 in., 14¢; 2 in., 16¢  
 Star..... 1 1/4 in., 16¢; 2 in., 19¢  
 Tackle Blocks—See Blocks.

**Pumps—**

Cistern..... 60¢@60¢@10¢  
 Pitcher Spout..... 80¢@80¢@10¢  
 Wood Pumps, Tubing, etc. 45¢@50¢  
 Barnes Dbl. Acting (low list)..... 50¢@10¢  
 Barnes' Pitcher Spout..... 80¢  
 Contractors' Rubber Diaphragm No. 2, B. & L. Block Co..... \$16.00  
 Daisy Spray Pump..... doz. \$7.20  
 Flint & Walling's, Fast Mail Hand (low list)..... 55¢  
 Flint & Walling's Fast Mail (low list)..... 55¢@5¢  
 Flint & Walling's Tight Top Pitcher..... 80¢  
 National Specialty Mfg. Co., Measur. ing..... 30¢  
 Mechanical Sprayer..... \$7.20  
 Myers' Pumps (low list)..... 50¢  
 Myers' Power Pumps..... 50¢  
 Myers' Spray Pumps..... 50¢

**Pump Leathers—**

Plunger and Lower Valve—Per gro.:  
 Inch..... 2 2 1/4 2 1/2 2 3/4  
 \$2.20 2.50 2.75 3.00  
 Inch..... 3 3 1/4 3 1/2 3 3/4  
 \$3.30 3.60 3.85 4.10 4.40  
 Plunger Cup Leathers—Per 100:  
 Inch..... 2 1/2 3 3 1/2 4  
 \$2.75 3.85 5.00 6.00

**Punches—**

Saddlers' or Drive, good..... doz. 50¢@75¢  
 Spring, single tube, good quality..... \$1.75@1.20  
 Revolving (4 tubes)..... doz. \$3.50@3.75  
 Bemis & Call Co.'s Cast St'l Drive..... 50¢  
 Bemis & Call Co.'s Check..... 50¢  
 Morrill's No. 1 (A.C.C.), doz. \$15.50..... 50¢  
 No. 2, doz. \$22.50..... 50¢  
 Hercules, each \$7.50..... 50¢  
 Niagara Hollow Punches..... 40¢  
 Niagara Solid Punches..... 55¢@10¢  
 Steel Screw, B. & K. Mfg. Co..... 50¢  
 Timmers' Hollow, B. & W. Co. 35¢@35¢  
 Timmers' Solid, P. S. & W. Co., doz., \$1.44..... 60¢

**Rail—Barn Door, &c.—**

Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:  
 1/4 3/4 1 in.  
 \$1.70 \$2.10 \$3.00 100 feet.  
 Angular for Sq. Groove Wheels:  
 Small. Med. Large.  
 \$1.50 \$1.90 \$2.60 100 feet.  
 Sliding Door, Iron Painted..... 2 1/2¢@2 1/2¢  
 Sliding Door, Wrought Brass, 1/4 in. lb., 36¢..... 30¢  
 Alhitt Mfg. Co.:  
 No. 1, Reliable Har. Track, ft. 5 1/2¢  
 No. 2, Reliable Har. Track, ft. 1¢  
 Cronk's:  
 Double Braced Steel Rail..... ft. 3¢  
 O. N. T. Rail..... 2 1/2¢  
 Griffin's:  
 xxx, 100 ft., 1 x 3-16 in., \$3.00;  
 1/4 x 3-16 in., 3.50;  
 Hinged Hanger, 100 ft., 1 x 3-16 in., \$3.10; 1 1/4 x 3-16 in., \$3.60.  
 Lane's:  
 Hinged Track 100 ft., 1 in., \$3.70;  
 1 1/4 in., \$4.40.  
 O. N. T., 100 ft., 1 in., \$2.75; 1 1/4 in., \$3.50; 1 1/2 in., \$4.00.  
 Standard, 1 1/4 in..... 100 ft. \$4.00  
 Lawrence Bros.:  
 100 ft. No. 201, \$4.00; No. 202, \$4.40.  
 New York, 1 x 3-16 in., 100 ft. \$2.75  
 Hinged Hanger Rail, ft. 11¢, 50¢  
 None Better..... ft. 3 1/4¢  
 Standard..... ft. 4¢  
 Myers' Stave Track..... 60¢  
 Richards' Mfg. Co.:  
 Common 1 x 3-16 in., \$2.75; 1 1/4 x 3-16, \$3.25; 1 1/2 x 3-16, \$3.50.  
 Special Hinged Hanger Rail..... \$4.40  
 Fire Door Track, ft. 2 1/4 x 3/4, 15¢; 3/4 x 3/4, 9¢.  
 Lag Screw Rail, No. 65..... 40¢  
 Gauge Trolley Track, ft. No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.  
 Safety Door Hanger Co.'s Storm King Safety..... 60¢  
 Safety Door Hanger Co.'s U. S. Standard..... 60¢  
 Stowell's:  
 Cast Rail..... ft. 1 1/4¢  
 Steel Rail, Plain..... 25¢  
 Wrought Bracket, 1 1/4 x 3-16 in., ft. 3¢  
 Wrought Bracket, 1 1/2 x 5-16 in., ft. 7¢  
 Swett's Hylo, ft. 11¢  
 P. L. R. Steel Rail..... 100 ft. \$3.00  
 No. 0, 1 x 3-16..... 100 ft. \$2.75

**Rakes—**

Net Prices, Malleable Rakes:  
 10 12 14 16-tooth  
 Shank..... \$1.50 1.60 1.75 1.85  
 Socket..... \$1.65 1.80 1.95 2.10  
 Steel, Garden and Gravel, Aug.  
 1, '99, List..... 70¢  
 Malleable Iron, Garden..... 70¢@10¢  
 Lawn Rakes, M'l Head, per doz.  
 20 teeth..... \$3.25@3.75  
 2 1/2 teeth..... \$3.50@3.75

<b>Sisal, Tarred, Medium Lath</b>	
Yarn:	
Mixed	lb. 7¢
Pure	lb. 8 1/2¢
<b>Cotton Rope:</b>	
Best, 1/4-in. and larger	15 1/2¢
Medium, 1/4-in. and larger	14 1/2¢
Common, 1/4-in. and larger	10 1/2¢
<b>Jute Rope:</b>	
Thread No. 1, 1/4-in. & up	lb. 6¢
Thread No. 2, 1/4-in. & up	lb. 5 1/2¢
Wool Twine	lb. 5 1/4¢
Old Colony Manila Transmission Rope	lb. 17 1/2¢

<b>Wire Rope</b>	
Galvanized	47 1/2¢
Plain	55 1/2¢

<b>Ropes, Hammocks—</b>	
Covert Mfg. Co.:	
Jute	50¢ & 55¢
Sisal	35¢ & 50¢
Covert Saddlery Works	60¢ & 65¢

<b>Rules—</b>	
Boxwood	60¢ & 10¢
Ivory	35¢ & 10¢
Chapin-Stephens Co.:	
Boxwood	60¢ & 10¢
Ivory	35¢ & 10¢
Miscellaneous	50¢ & 10¢
Combination	55¢ & 10¢
Stationers'	10¢ & 10¢
Lufkin's Steel	50¢ & 10¢
Lufkin's Lumber	70¢
Stanley R. & L. Co.:	
Boxwood	60¢ & 10¢
Ivory	35¢ & 10¢
Upon Nut Co.:	
Boxwood	60¢ & 10¢
Ivory	35¢ & 10¢

### Sash Balances—

See Balance, Sash.

### Sash Locks—

See Locks, Sash.

### Sash Weights—

See Weights, Sash.

### Sausage Stuffers or Fillers

See Stuffers or Fillers, Sausage.

### Saw Frames—

See Frames, Saw.

### Saw Sets—See Sets, Saw.

### Saw Tools—See Tools, Saw.

### Saws—

Atkins:	
Circular	50¢
Band	50¢ & 10¢
Cross Cuts	35¢ & 5¢
Mulay, Mill and Drag	50¢
One-Man Saw	40¢
Wood Saws	40¢
Hand Compass, &c.	40¢
Chapin-Stephens Co.	
Turning Saws and Frames	30¢ & 10¢
Diamond Saw & Stamping Works:	
Sterling Kitchen Saws	30¢ & 10¢
Diston's:	
Circular, Solid and Ins'ted Tooth	50¢
Band, 2 to 14 in. wide	50¢
Band, 1/4 to 1 1/2	50¢
Crosscuts	50¢
Narrow Crosscuts	50¢
Mulay, Mill and Drag	50¢
Framed Woodsaws	35¢
Woodsaw Blades	25¢
Woodsaw Hods	25¢
Hand Saws, Nos. 12, 9, 9, 16, 1100,	
108, 120, 76, 77, 8	25¢
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1,	
0, 00, Combination	25¢
Compass, Key Hole, &c.	25¢
Butcher Saws and Blades	35¢
C. E. Jennings & Co.:	
Back Saws	25¢
Butcher Saws	30¢
Compass and Key Hole Saws	35¢ & 5¢
Framed Wood Saws	30¢
Hand Saws	30¢ & 2 1/2¢
Wood Saw Blades	35¢
Millers Falls:	
Butcher Saws	15¢ & 10¢
Star Saw Blades	15¢ & 10¢
Peace & Richardson's Hand Saws	30¢
Simonds:	
Circular Saws	50¢
Crescent Ground Cross Cut Saws	35¢
One-Man Cross Cuts	40¢ & 10¢
Gang Mill, Mulay and Drag Saws	50¢
Band Saws	50¢
Back Saws	25¢ & 5¢
Butcher Saws	25¢ & 5¢
Hand Saws	25¢ & 5¢
Hand Saws, Bay State Brand	45¢
Compass, Key Hole, &c.	25¢ & 5¢
Wood Saws	35¢ & 5¢
Springfield Mach. Screw Co.:	
Diamond Kitchen Saws	40¢ & 10¢
Butcher Saws	35¢ & 40¢
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws	50¢

<b>Hack Saws—</b>	
Atkins' Hack Saw Blades A A A	25¢
Diston's:	
Concave Blades	25¢
Keystone	40¢
Hack Saw Frames	25¢
Fitchburg File Works, The Best	25¢
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180,	
complete	40¢ & 7 1/2¢
Hack Saws, Nos. 175, 180,	
complete	40¢ & 7 1/2¢

<b>Goodell's Hack Saw Blades</b>	
Griffin's Hack Saw Frames	35¢ & 5¢
Griffin's Hack Saw Blades	35¢ & 5¢
Springfield Mach. Screw Co.:	
Diamond Hack Saw Blades	35¢
Diamond Hack Saw Frames	35¢
Star Hack Saws and Blades	15¢ & 10¢
Sterling Hack Saw Blades	35¢
Sterling Hack Saw Frames	30¢ & 10¢

<b>Scroll—</b>	
Barnes' No. 7, 115	25¢
Barnes' Scroll Saw Blades	40¢
Barnes' Velocipede Power Scroll Saw	without boring attachment, \$20.00
with boring attachment, \$20.00	30¢
Lester, complete, \$10.00	15¢ & 10¢
Rogers, complete, \$4.00	15¢ & 10¢

<b>Scalers, Fish—</b>	
Covert's Saddlery Works	60¢ & 10¢

<b>Scales—</b>	
Family, Turnbull's	50¢ @ 50¢ & 10¢
<b>Counter:</b>	
Hatch, Platform, 1/2 oz. to 4 lbs.	doz. \$5.50
Two Platforms, 1/2 oz. to 8 lbs.	doz. \$16.00
Union Platform, Plain, \$1.70 @ 1.90	
Union Platform, Stpd. \$1.85 @ 2.15	
<b>Chattillon's:</b>	
Eureka	25¢
Favorite	40¢
Crocers' Trip Scales	50¢
<b>Chicago Scale Co.:</b>	
The "Little Detective"	25 lbs 50¢
Union or Family No. 2	50¢
Portable Platform (reduced list)	50¢
Wagon or Stock (reduced list)	25¢ & 35¢
"The Standard" Portables	50¢
"The Standard" R. R. and Wagon	50¢

<b>Scrapers—</b>	
Box, 1 Handle	doz. \$2.00 @ 2.25
Box, 2 Handle	doz. \$2.00 @ 2.25
Ship, Light, \$2.00; Heavy, \$4.50	
Adjustable Box Scraper (S. R. & L. Co.)	\$6.00
Chapin-Stephens Co., Box	50¢ & 10¢

<b>Screens, Window and Frames—</b>	
Flyer Pattern Screens	60¢ & 5¢
Maine Screen Frames	40¢ & 10¢
Perfection Screens	60¢ & 5¢
Phillips' Screen Frames	60¢ & 5¢
<b>See also Doors.</b>	

<b>Screws—Bench and Hand</b>	
Bench, Iron, doz., 1 in.	\$2.50 @ 3.75
2 1/2; 1 1/2, \$3.00 @ 3.25; 1 1/4, \$3.50 @ 3.75	
Bench, W'd. Beech, doz.	30¢ & 5¢
Hand, Wood	30¢ & 5¢
R. Blas Mfg. Co., Hand	30¢ & 5¢
Chapin-Stephens Co., Hand	30¢ & 5¢
Ohio Tool Co., Bench and Hand	30¢

<b>Coach, Lag and Hand Rail—</b>	
Lag, Common Point, list Oct.	
1, '99	80¢ @ 10¢
Coach and Lag, Gimlet Point, list Oct. 1, '99	75¢ @ 10¢
Hand Rail, list Jan. 1, '81	70¢ @ 10¢

<b>Jack Screws—</b>	
Standard List	75¢ @ 10¢
Millers Falls	50¢ @ 10¢
Millers Falls, Roller	50¢ @ 10¢
P. S. & W.	50¢ @ 10¢
Sargent	70¢ @ 10¢
Swett Iron Works	75¢ @ 10¢

### Machine—

List Jan. 1, '98:

Flat or Round Head, Iron	50¢ @ 10¢
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Flat or Round Head, Brass	50¢ @ 10¢
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Set and Cap—	
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Set (Iron or Steel)	75¢
Sq. Hd. Cap	10¢
Hex. Hd. Cap	70¢
Rd. or Fillister Hd.	70¢
Cap	65¢

### Wood—

List July 23, 1903.

Manufacturers' printed discounts:

Flat Head, Iron	87¢ @ 10¢
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Round Head, Iron	85¢ @ 10¢
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Flat Head, Brass	85¢ @ 10¢
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Round Head, Brass	80¢ @ 10¢
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Flat Head, Bronze	77¢ @ 10¢
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Round Head, Bronze	75¢ @ 10¢
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Drive Screws	87¢ @ 10¢
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### Scroll Saws—

See Saws, Scroll.

### Scythes—

Prices announced for next season:

Clipper Pattern, Grass	\$6.20
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Full Polished, Clipper	\$6.75
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Grain	\$8.00
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Clipper, Grain	\$8.25
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Weed and Bush	\$6.25
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### Seeders, Raisin—

Enterprise 25¢ @ 30¢

### Sets—Awl and Tool—

Brad Awl and Tool Sets:

Wood Handle, 10 Awls	doz. \$2.00 @ 2.25
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Wood Handle, 14 Awls, 6 Tools	doz. \$2.50 @ 2.60
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Alken's Sets, Awl and Tools:	
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No. 20, 1/2 doz. \$10.00	50¢ @ 10¢
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Fray's Adj. Tool Handles, Nos. 1, 12;	
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2, 118; 3, 112; 4, 99; 5, 87	50¢
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C. E. Jennings & Co.'s Model Tool Holders	30¢
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Millers Falls Adj. Tool Handles, Nos. 1, 12;	
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No. 5, 118; 15, 10¢	
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Stanley's Excelsior:	
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No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50	50¢ @ 10¢
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### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel. 1/2 doz sets \$9.00

### Nail—

Square 1/2 doz. \$2.25 @ 2.50

Round, Bk. and Pol., assorted.

Octagon	gro. \$3.50 @ 3.75
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Buck Bros.	27 1/2¢
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Mayhew's Diamond Point, 1/2 gro.	\$2.00
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Snell's Cannon's Diamond Point	1/2 gro. \$7.20
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Snell's Cor'gated, Cup Pt.	1/2 gro. \$7.20
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Snell's Knurled, Cup Pt.	1/2 gro. \$7.50
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Springfield Mach. Screw Co.	
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Diamond Knurled Cup Pt.	1/2 gro. \$7.50
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<b>Rivet—</b>	
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Regular list	75¢ @ 75¢ & 10¢
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<b>Saw—</b>	
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Alken's:	
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Genuine	50¢ & 10¢
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Imitation	50¢ & 10¢
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Atkin's:	
Criterion	50¢
Adjustable	40¢
Bemis & Call Co.'s:	
Cross Cut	30¢
Plate	20¢
Diastion's Star and Monarch	25¢
Morrill's No. 1, \$15.00	50¢
Nos. 3 and 4, Cross Cut, \$20.63	50¢
No. 5, Mill, \$30.00	50¢
Nos. 10, 11, 12, \$15.63	50¢
No. 1 Old Style, \$10.00	50¢
Special, \$16.25	50¢
Giant Royal, Cross Cut	1/2 doz. \$8.50
Royal, Hand	1/2 doz. \$5.00
Taintor Positive	1/2 doz. \$6.75

### Shaving—

Fox Shaving Sets, No. 30	1/2 doz. net, \$24.00
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### Sharpeners, Knife—

Chicago Wheel & Mfg. Co.	65¢
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### Shaves, Spoke—

Iron	doz. \$1.00 @ 1.15
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Wood	doz. \$1.75 @ 2.00
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Bailey's (Stanley R. & L. Co.)	30¢ @ 30¢ & 10¢
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Chapin-Stephens Co.	30¢ @ 30¢ & 10¢
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Goodell's	1/2 doz. \$9.00
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Wood's F1 and F2	50¢
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### Shears—

Cast Iron	7 8 9 in.
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Best	16.00 18.00 20.00 gro.
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Good	\$13.00 15.00 17.00 gro.
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Cheap	\$5.00 6.00 7.00 gro.
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### Straight Trimmers, &c.—

Best quality, Jap.	70¢ @ 70¢ & 10¢
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Best quality, Nickel	60¢ @ 60¢ & 10¢
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Fair quality, Jap.	80¢ @ 80¢ & 10¢
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Fair quality, Nickel	75¢ @ 75¢ & 10¢
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Tailors' Shears	40¢ @ 40¢ & 10¢
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Acme Cast Shears	40¢ @ 40¢ & 10¢
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Heinisch's Tailor's Shears	10¢
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Wilkinson's Hedge, 1900 list	45¢
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Wilkinson's Branch, Lawn & Border	40¢
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Wilkinson's Sheep, 1900 list	50¢
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### Tinners' Snips—

Steel Blades	20¢ & 5¢ @ 20¢ & 10¢
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Steel Laid Blades	40¢ @ 10¢ & 5¢
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Forged Handles, Steel Blades, Berlin	40¢ @ 10¢
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Heinisch's Snips	40¢
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NOVEMBER 2, 1904.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

1 Burnt Iron.....	1 gross ton	\$6.50	7.1
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